

PROACTIVE USE OF VDR DATA

Capt. Minas Myrtidis



SOLAS Regulation 20

Ships, when engaged on international voyages,
shall be fitted with a voyage data recorder
(VDR) as follows:

SOLAS Regulation 20

- Passenger ships constructed on or after 1 July 2002;
- Passenger ships, other than ro-ro passenger ships, constructed before 1 July 2002, not later than 1 January 2004;

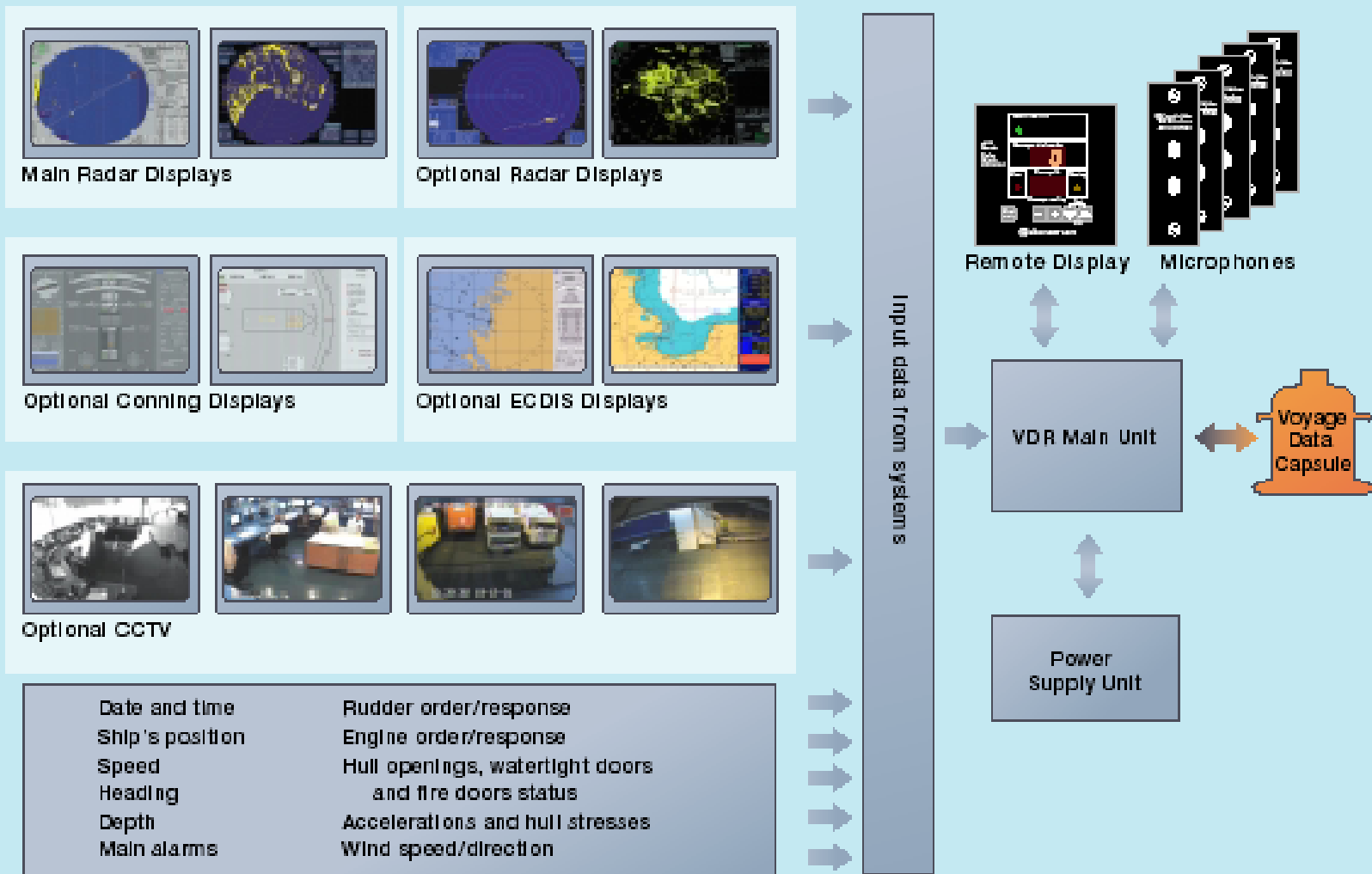
Company Profile

Norwegian Cruise Line and Orient Lines operate a combined fleet of 11 vessels. New vessels will be added with the completion of the project America, currently under construction and the acquisitions of the **SS "United States"** & **SS "Independence."**

Company Compliance

- Our newer vessels, have Voyage Data Recorders installed.
- We are in the process of fitting existing vessels with VDR.
- Our new buildings will be compliant with the new SOLAS carriage requirements.

VDR DATA



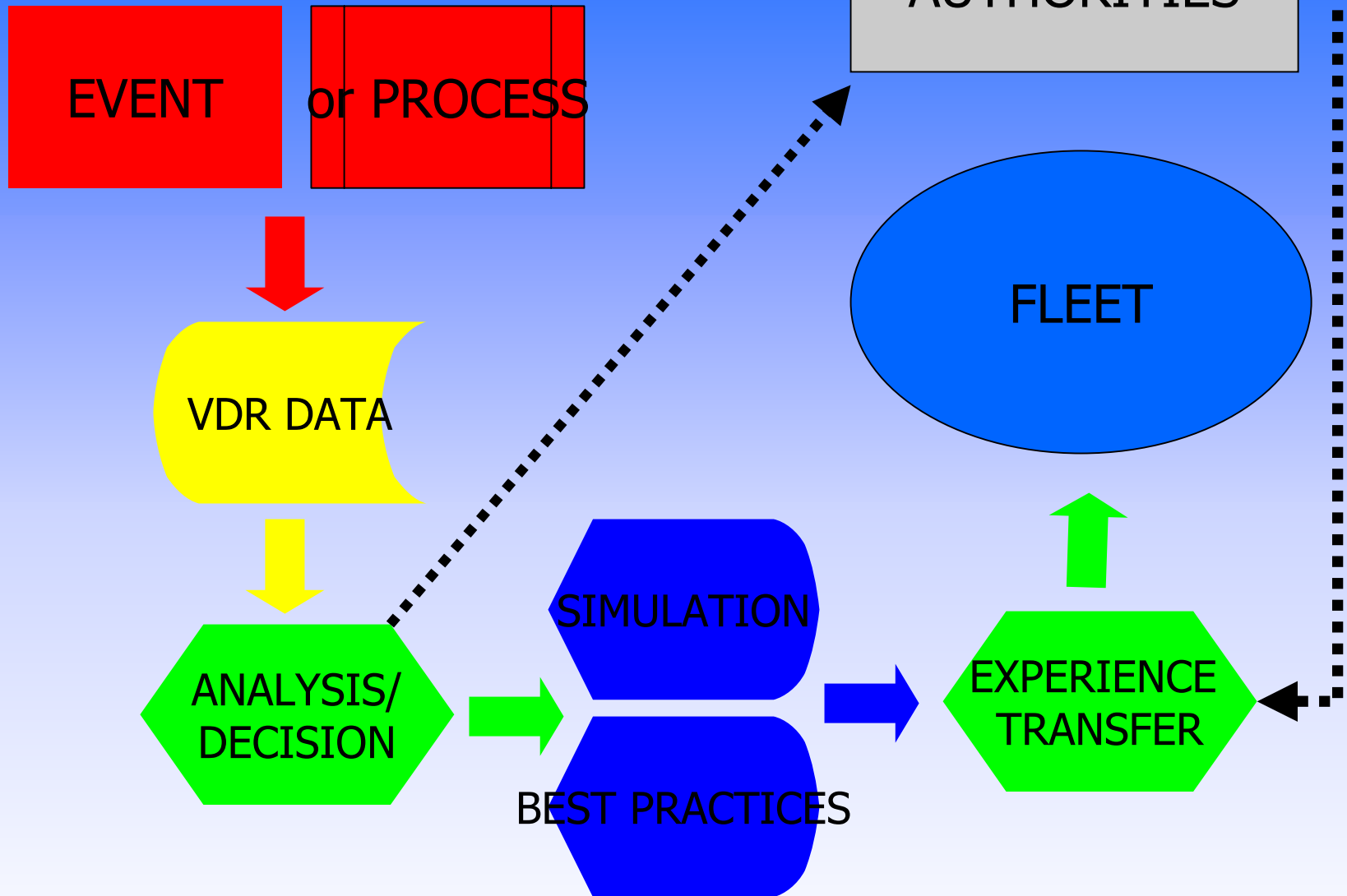
PROACTIVE USE OF DATA

- Analysis of specific events
- Debriefing of maneuvers with Bridge Team by playing back data through ECDIS / ARPA (if equipment has this feature)
- Comparison of maneuvering strategies between different Captains/Staff Captains to develop "best practices"

PROACTIVE USE OF DATA

- Playback of data at a ship simulation facility for training purposes (case studies)
- Experience Transfer

VDR DATA



BENEFITS

- Graphic & accurate representation of the event.
- Monitoring compliance with International and National rules and regulations.
- Monitoring compliance with the Company's SEMS system, specifically the Navigation Standards Manual.

BENEFITS

- Improvement of docking or undocking operations
- Increase Safety
- Efficiency of operations
- Procedure Verification
- Incident accident investigation
- Lessons learned

LOG BT
SPEED ▲ 18.13 kt
SPEED ▼ 1.10 kt
GyroHDG 310.2 deg

SET HDG 310.0 deg
NEXTHDG 265.7 deg
SET RAD 1.50 NM
NEXTRAD PD1.30 NM

DGPS 1
LAT 22:13.287 N
LON 114:20.511 E

PAST POS OFF
VECTOR T 6 min
TRAIL 6

TCPA 10 min
CPA 0.5 NM

TRACK 850 Hong Kon
MAP 889 Hong Kon

DANGEROUS TARGET

TARGET
TCPA 3:14 min
CPA 0.33 NM

SPEED 4.63 kt
COURSE 104.4 deg

DISTANCE 1.27 NM
BEARING 287.2 deg

TRUE DATA

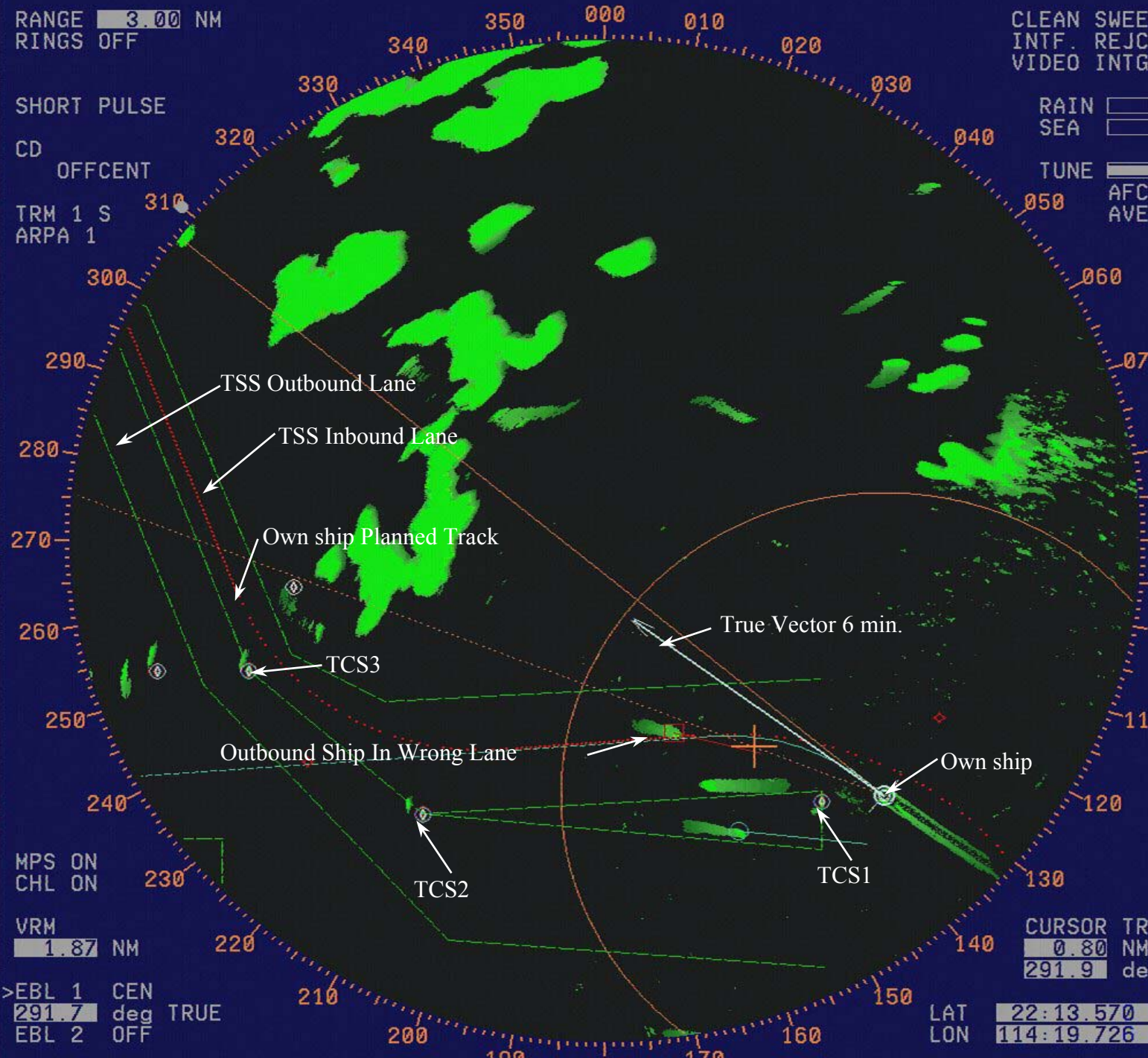
RANGE 3.00 NM
RINGS OFF

SHORT PULSE
CD OFFCENT
TRM 1 S
ARPA 1

MPS ON
CHL ON

VRM 1.87 NM

>EBL 1 CEN 291.7 deg TRUE
EBL 2 OFF



CLEAN SWEE
INTF. REJC
VIDEO INTG

RAIN
SEA

TUNE
AFC
AVE

CURSOR TR
0.80 NM
291.9 de

LAT 22:13.570
LON 114:19.726

LAT	22:13.202
LOX	114:15.013

LOG BT
SPEED ▲ 18.49 kt
SPEED ▼ 1.40 kt
GyroHDG 306.2 deg

SET HDG 340.0 deg
NEXTHDG --- deg
SET RAD 0.85 NM
NEXTRAD PD- NM

DGPS 1
LAT 22:13.930 N
LON 114:17.075 E

PAST POS OFF
VECTOR T 6 min
TRAIL 6

TCPA 10 min
CPA 0.5 NM

TRACK 850 Hong Kon
MAP 889 Hong Kon

LOST TARGET

Hong Kong-In
0008 TCS No 4 in

TRACK 339.0 deg
NEXT 300.7 deg
RADIUS 0.50 NM

OFF TRACK

RANGE 1.50 NM
RINGS OFF

SHORT PULSE

CD OFFCENT

TRM 1 S
ARPA 1

MPS ON
CHL ON

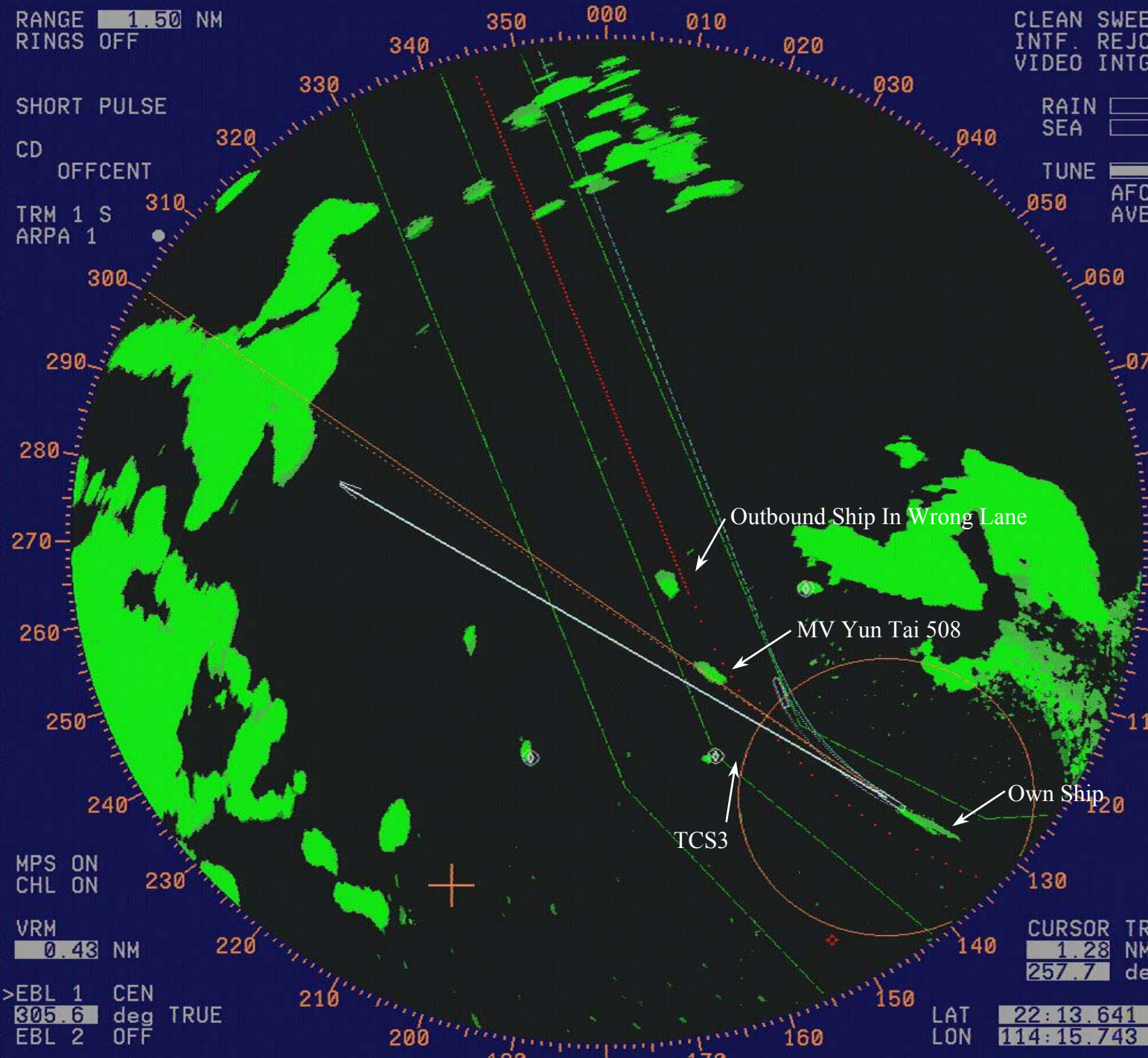
VRM 0.43 NM

>EBL 1 CEN 305.6 deg TRUE
EBL 2 OFF

CLEAN SWEEP
INTF. REJO
VIDEO INTG

RAIN
SEA

TUNE
AFC
AVE



CURSOR TR 1.28 NM
257.7 de

LAT 22:13.641
LON 114:15.743

LOG BT
SPEED ▲ 12.51 kt
SPEED ▼ 0.99 kt
GyroHDG 334.2 deg

TRACKPILOT OFF
NEXTHDG --- deg
SET RAD --- NM
NEXTRAD PD- NM

DGPS 1
LAT 22:14.108 N
LON 114:16.868 E

PAST POS OFF
VECTOR T 6 min
TRAIL 6

TCPA 10 min
CPA 0.5 NM

TRACK 850 Hong Kon
MAP 889 Hong Kon

19.10.01 06:38 ZT

Hong Kong-In
0008 TCS No 4 in

TRACK 339.0 deg
NEXT 300.7 deg
RADIUS 0.50 NM

OFF COURSE
OFF TRACK

RANGE 1.50 NM
RINGS OFF

SHORT PULSE

CD OFFCENT

TRM 1 S
ARPA 1

MPS ON
CHL ON

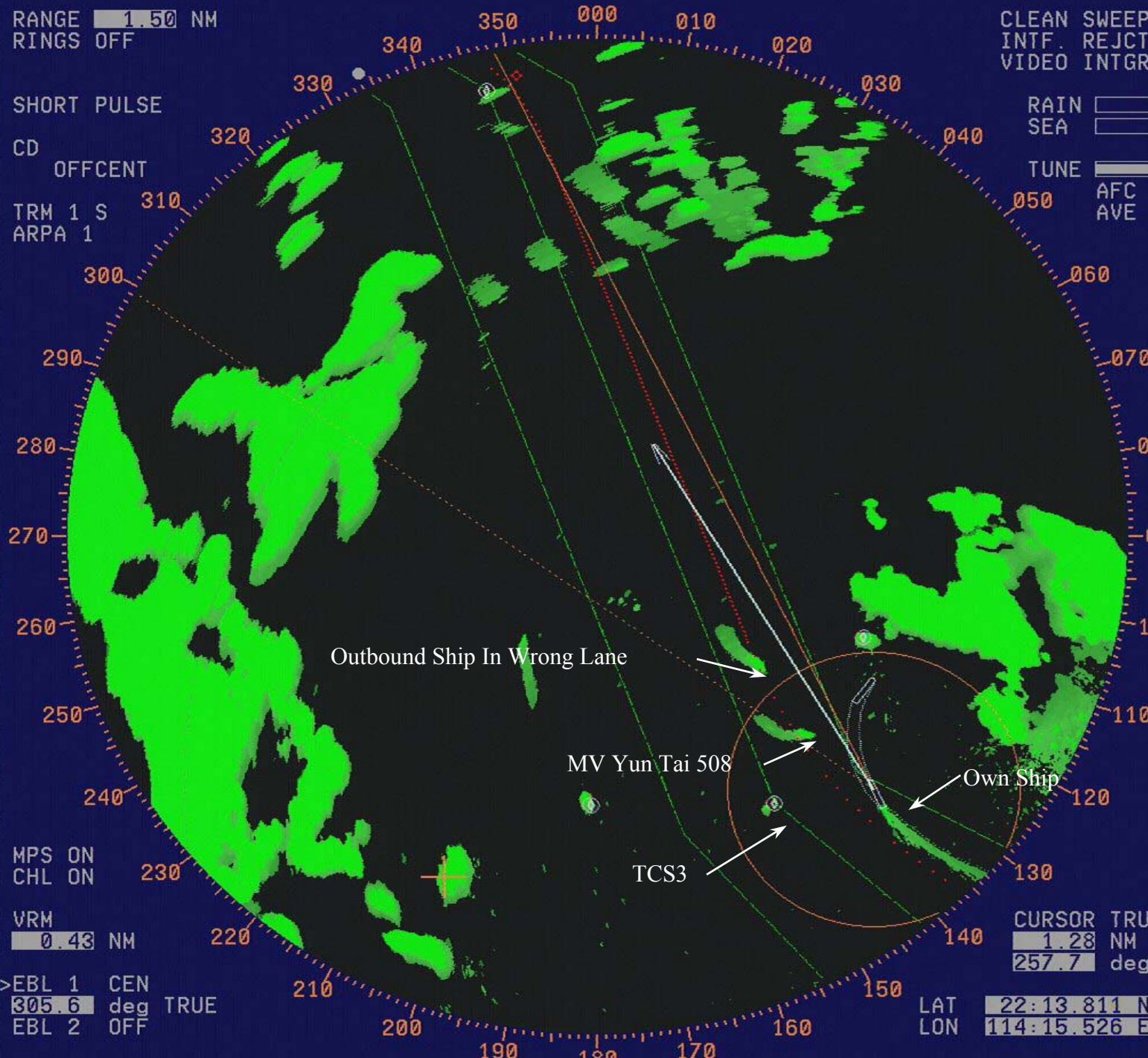
VRM
0.43 NM

>EBL 1 CEN
305.6 deg TRUE
EBL 2 OFF

CLEAN SWEEP
INTF. REJECT
VIDEO INTGR

RAIN
SEA

TUNE
AFC
AVE



LOG BT
 SPEED ▲ 6.1 kt
 SPEED ▼ 2.38 kt
 GyroHDG 351.9 deg

TRACKPILOT OFF
 NEXTHDG --- deg
 SET RAD --- NM
 NEXTRAD PD- NM

DGPS 1
 LAT 22:14.230 N
 LON 114:16.809 E

PAST POS OFF
 VECTOR T 6 min
 TRAIL 6

TCPA 10 min
 CPA 0.5 NM

TRACK 850 Hong Kon
 MAP 889 Hong Kon

19.10.01 06:39 ZT

Hong Kong-In
 0008 TCS No 4 in

TRACK 339.0 deg
 NEXT 300.7 deg
 RADIUS 0.50 NM

OFF COURSE
 OFF TRACK

RANGE 0.75 NM
 RINGS OFF

SHORT PULSE

CD OFFCENT

TRM 1 S
 ARPA 1

MPS ON
 CHL ON

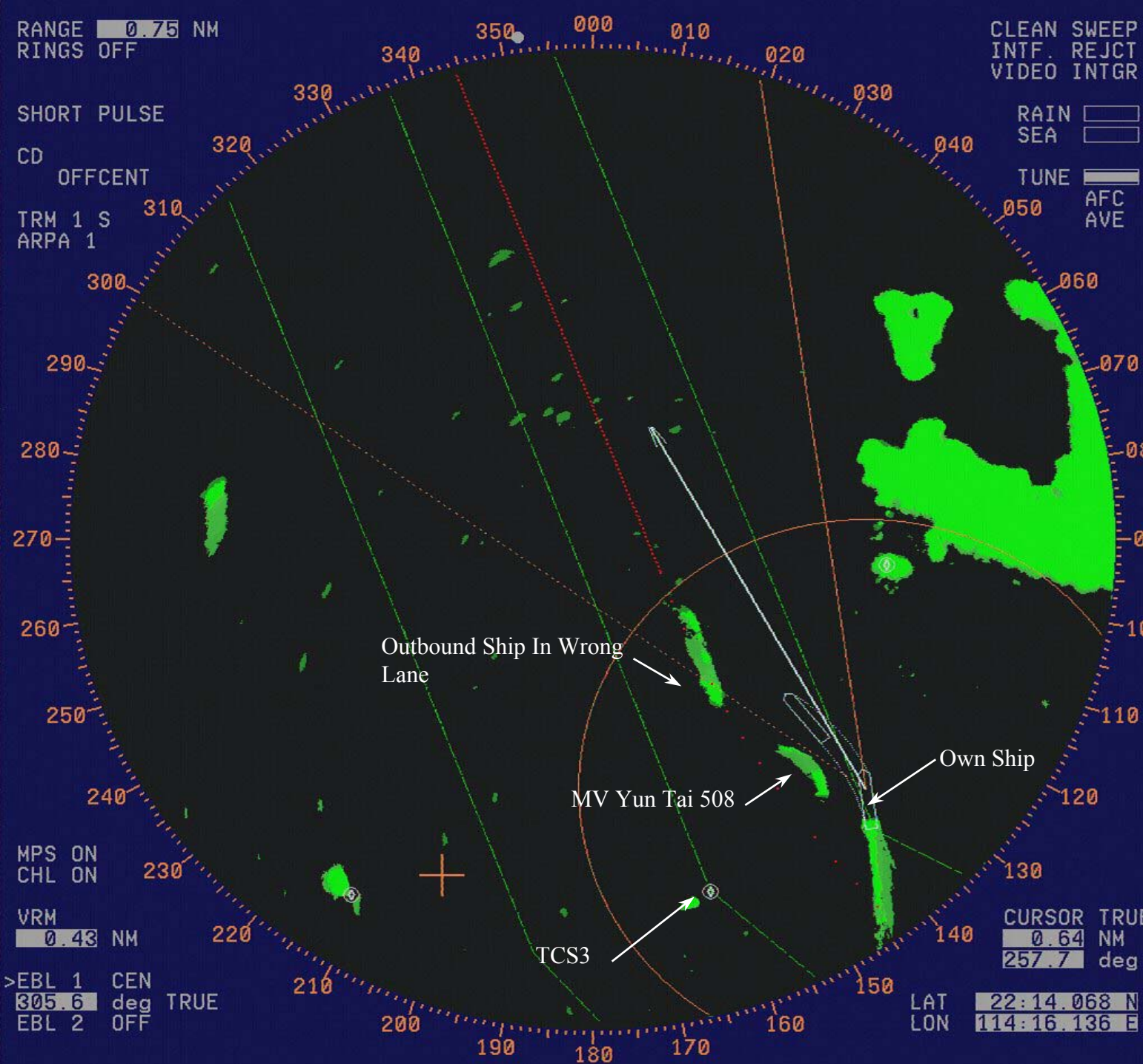
VRM
 0.43 NM

>EBL 1 CEN
 305.6 deg TRUE
 EBL 2 OFF

CLEAN SWEEP
 INTF. REJCT
 VIDEO INTGR

RAIN
 SEA

TUNE
 AFC
 AVE



CURSOR TRUE
 0.64 NM
 257.7 deg

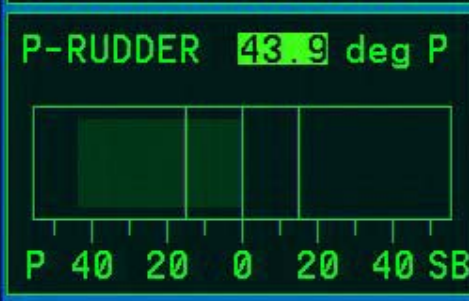
LAT 22:14.068 N
 LON 114:16.136 E

LAT 22:14.229 N
LON 114:16.810 E

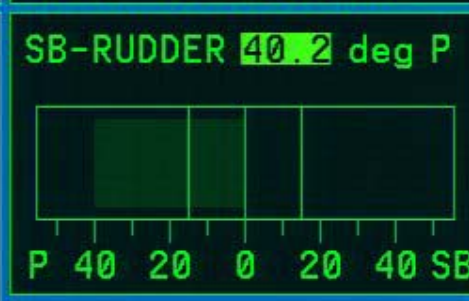
DGPS 1

TRACKPILOT OFF PD

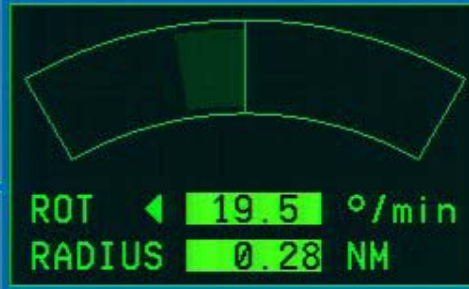
TIME 06:39:03 ZT
DATE 19.10.01 ZT



GYRO HEADING 352.4 deg
DRIFT ANGLE ◀ 20.4 deg
SET HEADING ---.--- deg
NEXT HEADING ---.--- deg
SET RADIUS ---.--- NM
NEXT RADIUS ---.--- NM



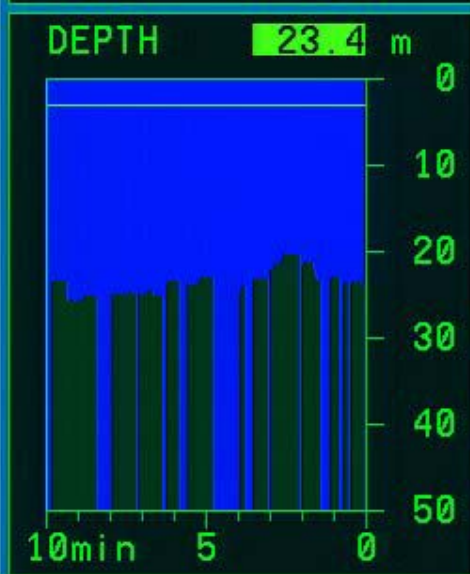
LOG SPEED BT
▲ 6.15 kt
◀ 2.35 kt
ACT SPEED 6.58 kt



PROFILE 20.0 kt
PLANNED 10.0 kt

DGPS CMG 333.0 deg
1 SMG 6.30 kt

OCEAN TERMINAL
TTG 00:52
ETA 19.10.01 07:31 ZT
PLAN ---.---
---.---
DELAY 00:00
ARR. SPEED 10.0 kt



Hong Kong-In
TRACK NO. 850
WP 7 -> 8
RL TO TRACK
OFF COURSE
TRACK 323.6 deg
XTD R 228 m
OFF TRACK
TCS No 4 in
22:16.303 N
114:15.755 E
WPB 334.8 deg
WPD 2.3 NM
TTG 00:20:47

LOG BT
SPEED ▲ 6.43 kt
SPEED ▼ 1.01 kt
GyroHDG 329.2 deg

TRACKPILOT OFF
NEXTHDG --- deg
SET RAD --- NM
NEXTRAD PD --- NM

DGPS 1
LAT 22:14.300 N
LON 114:16.750 E

PAST POS OFF
VECTOR T 6 min
TRAIL 6

TCPA 10 min
CPA 0.5 NM

TRACK 850 Hong Kon
MAP 889 Hong Kon

19.10.01 06:39 ZT

Hong Kong-In
0008 TCS No 4 in

TRACK 339.0 deg
NEXT 300.7 deg
RADIUS 0.50 NM

OFF TRACK

RANGE 0.75 NM
RINGS OFF

SHORT PULSE

CD OFFCENT

TRM 1 S
ARPA 1

MPS ON
CHL ON

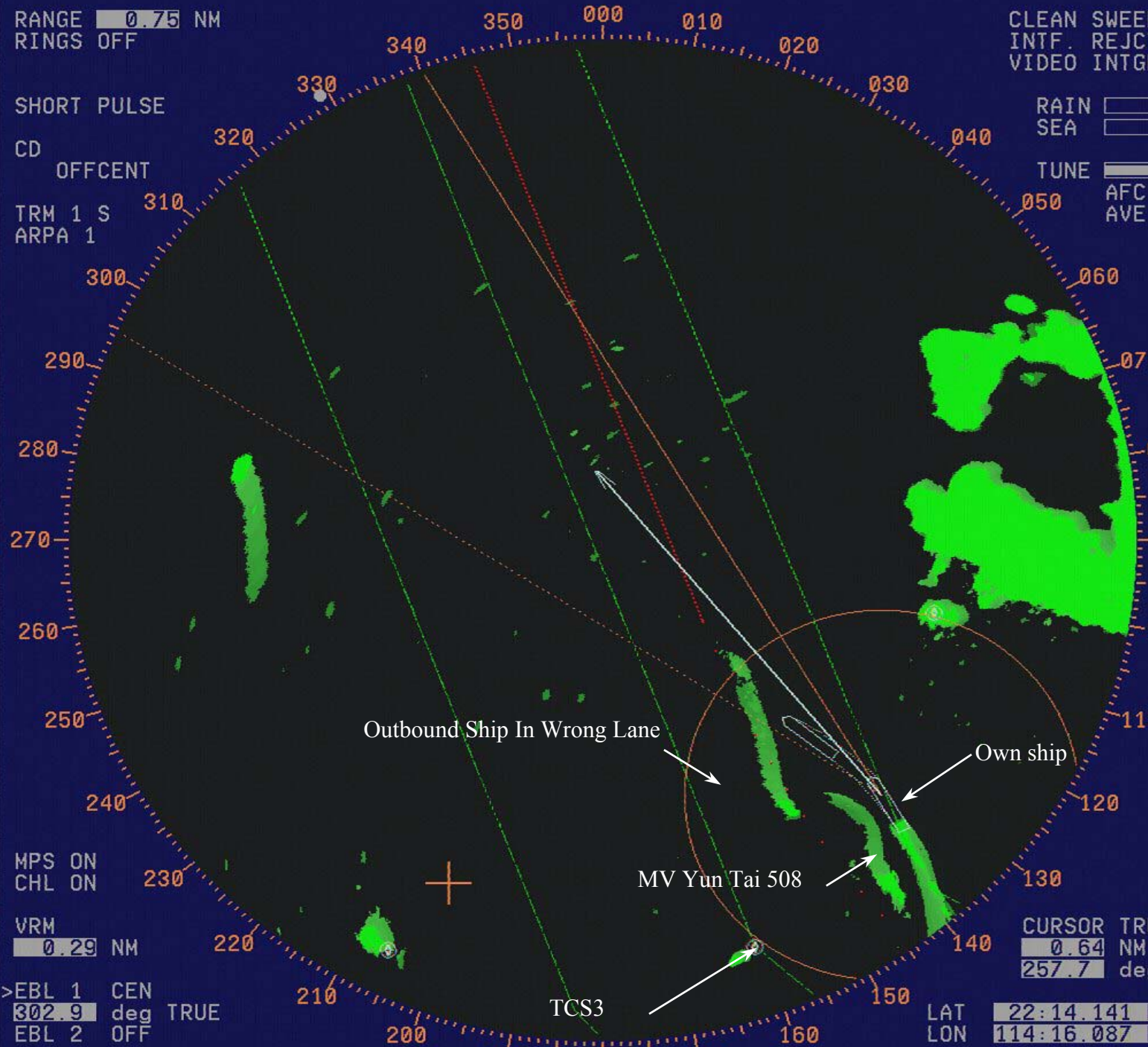
VRM 0.29 NM

>EBL 1 CEN 302.9 deg TRUE
EBL 2 OFF

CLEAN SWEE
INTF. REJC
VIDEO INTG

RAIN
SEA

TUNE
050 AFC
AVE



CURSOR TR
0.64 NM
257.7 de

LAT 22:14.141
LON 114:16.087

LAT 22:14.302 N
LON 114:16.749 E

DGPS 1

TRACKPILOT OFF PD

TIME 06:39:58 Z
DATE 19.10.01 Z

P-RUDDER 29.7 deg P



P 40 20 0 20 40 SB

LOG SPEED BT

▲ 6.44 kt

◀ 1.01 kt

ACT SPEED 6.51 kt

GYRO HEADING 329.0 deg

DRIFT ANGLE ◀ 9.1 deg

SET HEADING ---.--- deg

NEXT HEADING ---.--- deg

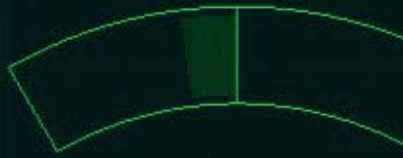
SET RADIUS ---.--- NM

NEXT RADIUS ---.--- NM

SB-RUDDER 24.8 deg



P 40 20 0 20 40



ROT ◀ 14.7 °/m

RADIUS 0.48 NM

OFF P 15 10 5 0 5 10 15 SB
COURSE deg

OFF TRACK m

L 40 20 0 20 40 R

DGPS CMG 323.0
1 SMG 6.50

Hong Kong-In
TRACK NO. 850
WP 7 -> 8
RL TO TRACK

TRACK 327.4 deg
XTD R 210 m

OFF TRACK
TCS No 4 in

22:16.303 N
114:15.755 E

WPB 335.3 deg
WPD 2.2 NM
TTG 00:20:14

PROFILE 20.0 kt
PLANNED 10.0 kt

OCEAN TERMINAL
TTG 00:51

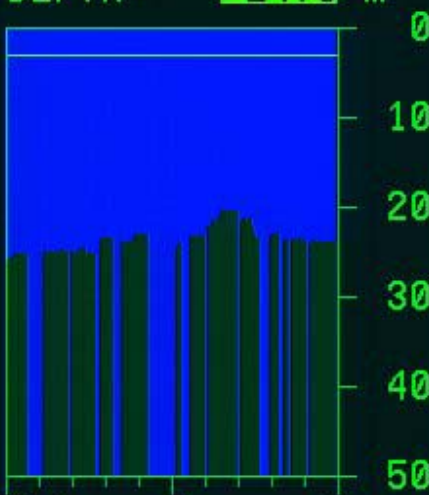
ETA 19.10.01
07:31 ZT

PLAN ---.---
---.---

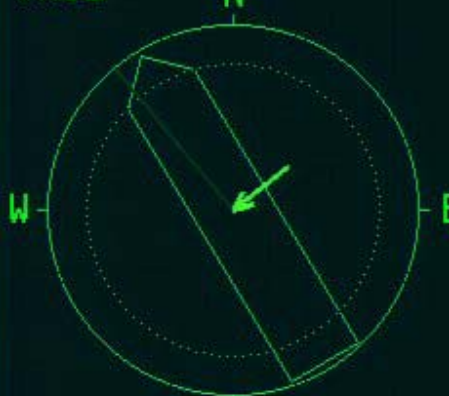
DELAY 00:00

ARR. SPEED 10.0 kt

DEPTH 24.0 m



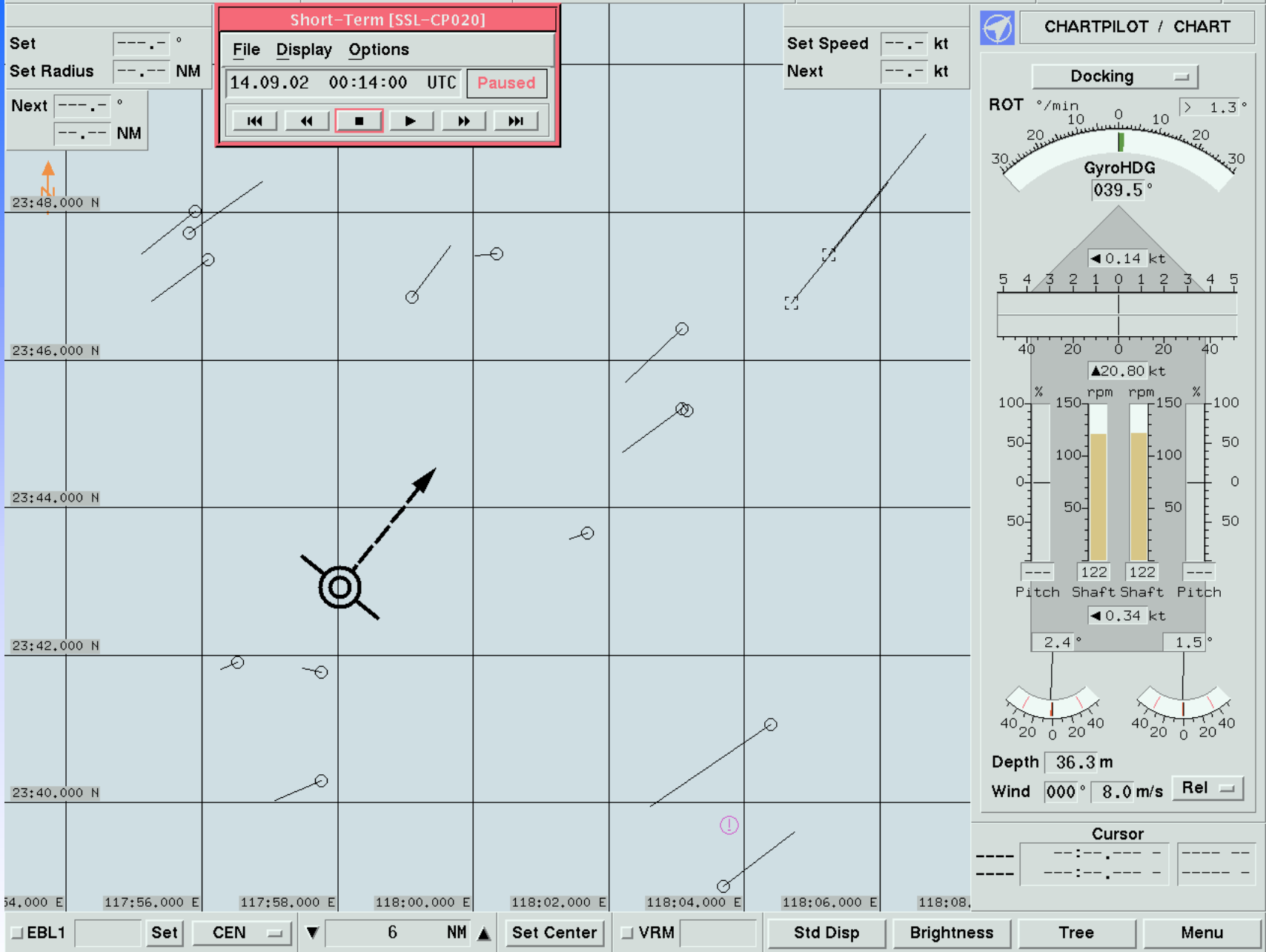
WIND 51 deg 11.5 m/s
TRUE



SET DRIFT

ECDIS

Lat 23:42.917 N REP. PAUSE GyroHDG 039.5° Speed 20.8 kt DGPS 1 C-MAP Standard Date 14.09.02 UTC
Lon 117:58.034 E WGS84 ROT > 1.3°/min Course 039.0° TM / TRUE Time 00:13:54 UTC



Lat	23:43.732 N	REP. PAUSE	GyroHDG	039.6°	Speed	20.8 kt	DGPS 1	C-MAP	Standard	Date	14.09.02 UTC	
Lon	117:58.745 E	WGS84	ROT	> 1.3°/min	Course	039.0°		TM / TRUE		Time	00:16:55 UTC	

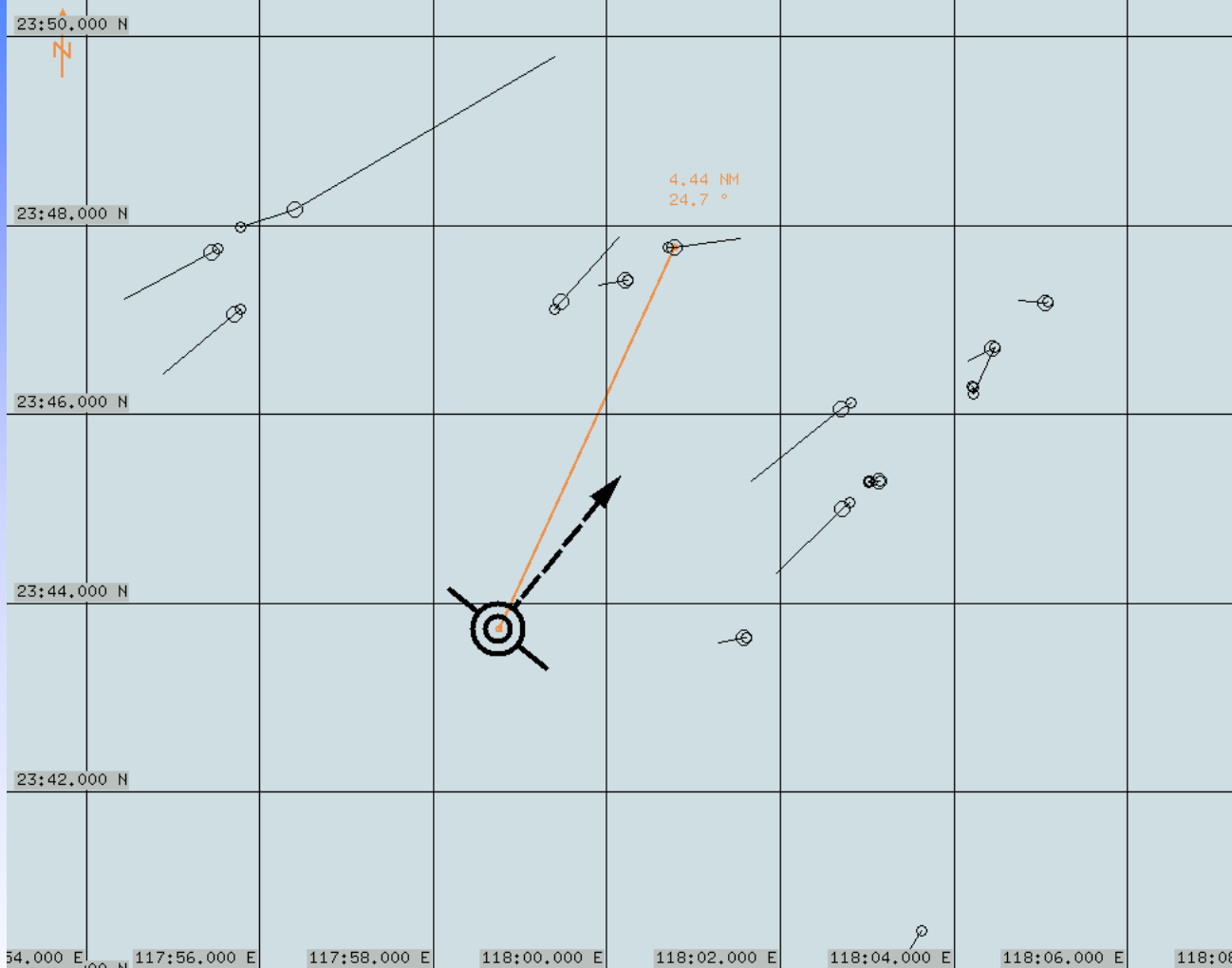
Set °
Set Radius NM
Next °
 NM

Short-Term [SSL-CP020]

File Display Options

14.09.02 00:17:02 UTC Paused

Set Speed kt
Next kt



CHARTPILOT / CHART

Docking ☐

ROT °/min °

GyroHDG °

kt

kt

rpm rpm

Pitch ° °

Depth m

Wind ° m/s Rel ☐

Cursor

<input type="checkbox"/> EBL1	Set	<input type="checkbox"/> CEN	<input type="text" value="6"/> NM	Set Center	<input type="checkbox"/> VRM	Std Disp	Brightness	Tree	Menu
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Lat	23:45.265 N	REP. PAUSE	GyroHDG	039.1°	Speed	20.8 kt	DGPS 1	C-MAP	Standard	Date	14.09.02 UTC	
Lon	118:00.100 E	NGS84	ROT	< 0.7°/min	Course	039.0°		TM / TRUE	Overscaled	Time	00:22:35 UTC	

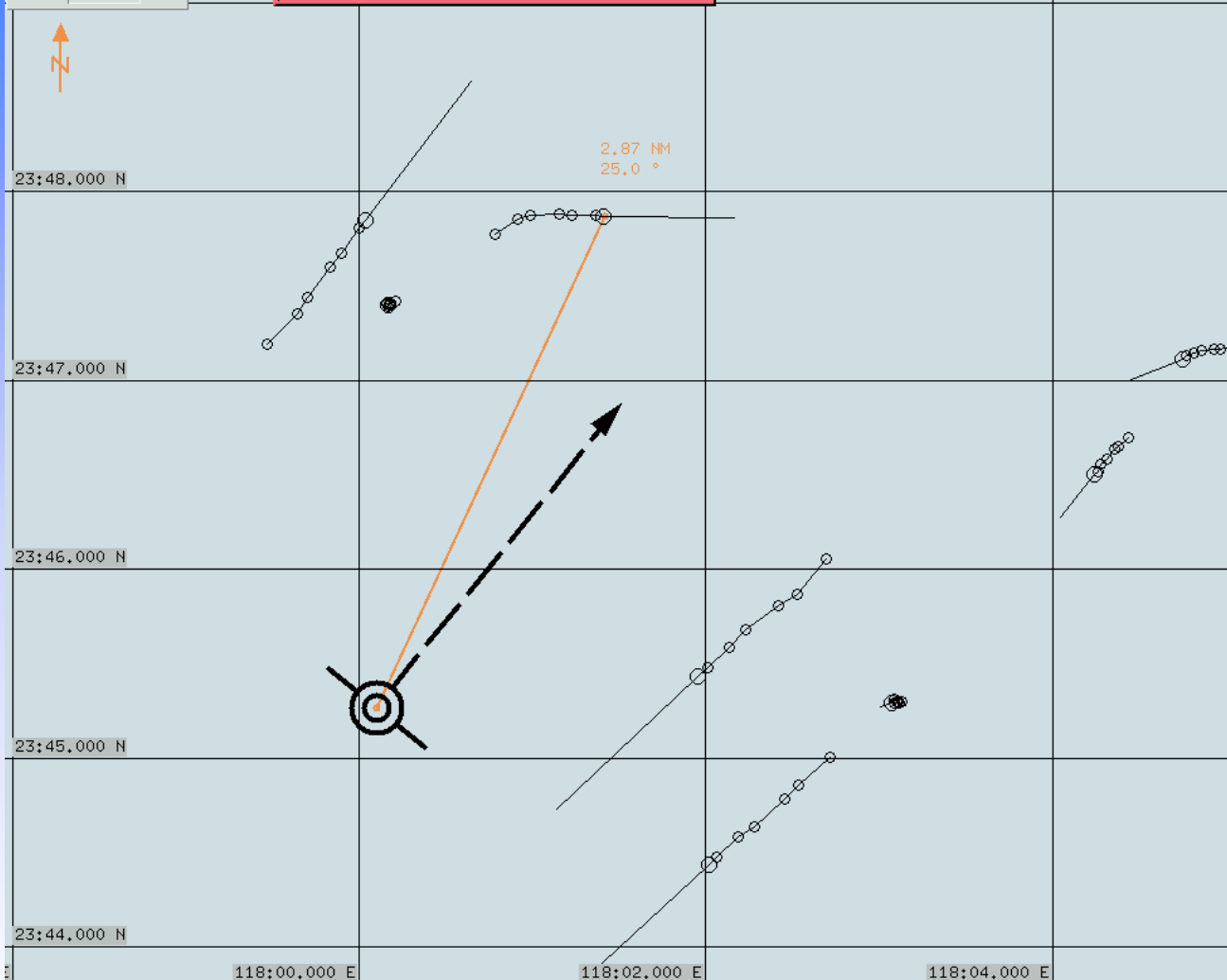
Set
Set Radius
Next

Short-Term [SSL-CP020]

File Display Options

14.09.02 00:22:35 UTC Paused

Set Speed
Next



CHARTPILOT / CHART

Docking ☐

ROT °/min 0 < 0.7°

GyroHDG

rpm rpm

Pitch Shaft Shaft Pitch

Depth

Wind Rel ☐

Cursor

<input type="checkbox"/> EBL1	Set	<input type="checkbox"/> CEN	<input type="text" value="3.0"/> NM	Set Center	<input type="checkbox"/> VRM	Std Disp	Brightness	Tree	Menu
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Lat	23:45.806 N	REP. PAUSE	GyroHDG	039.1°	Speed	20.9 kt	DGPS 1	C-MAP	Standard	Date	14.09.02 UTC	
Lon	118:00.577 E	NGS84	ROT	< 3.3°/min	Course	039.0°		TM / TRUE	Overscaled	Time	00:24:35 UTC	

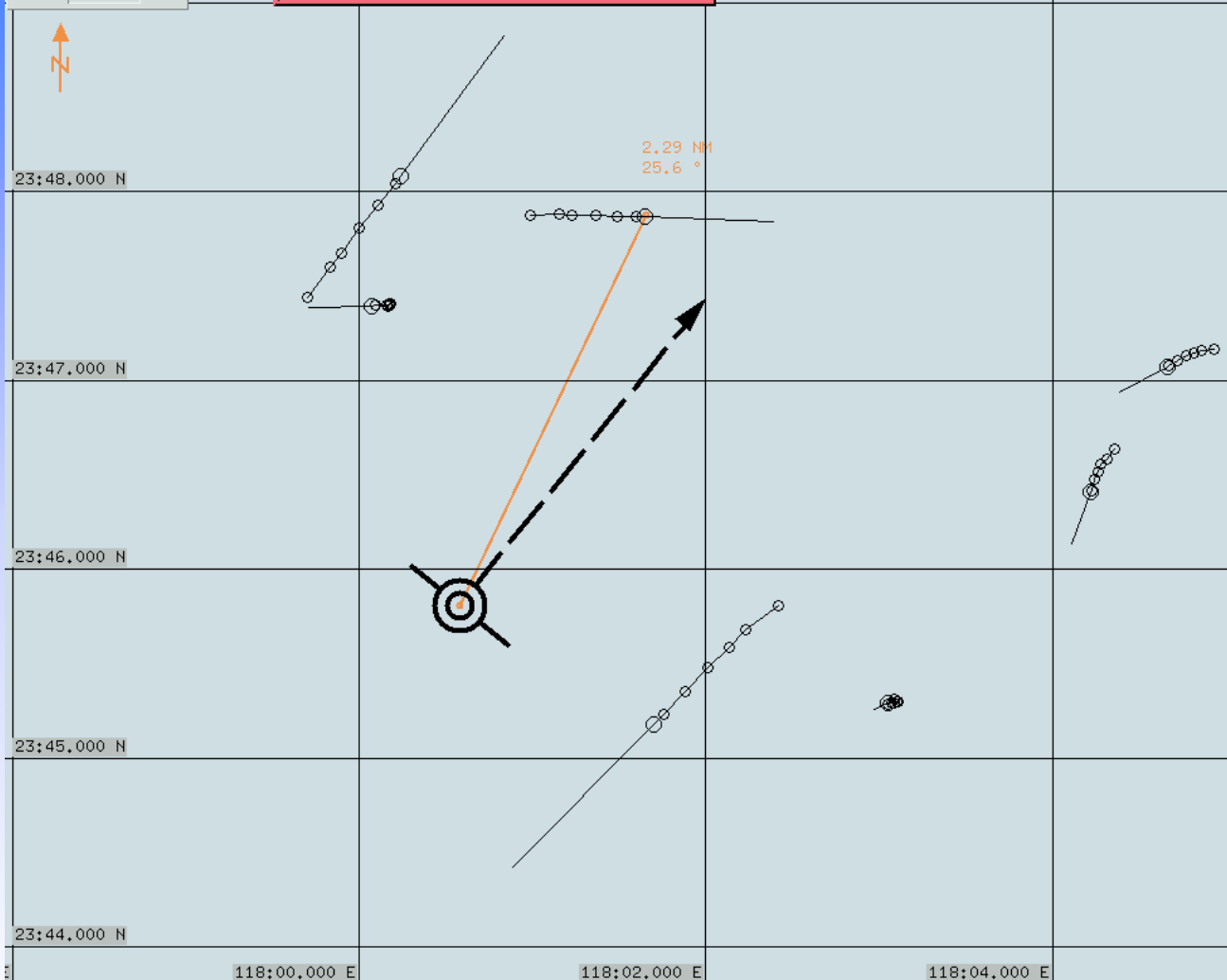
Set
Set Radius
Next

Short-Term [SSL-CP020]

File Display Options

14.09.02 00:24:35 UTC Paused

Set Speed
Next



CHARTPILOT / CHART

Docking ☐

ROT °/min 0 < 3.3°

GyroHDG

rpm rpm

Pitch Shaft Shaft Pitch

Depth

Wind Rel ☐

Cursor

<input type="checkbox"/> EBL1	Set	CEN <input type="checkbox"/>	<input type="text" value="3.0"/> NM <input type="checkbox"/>	Set Center	<input type="checkbox"/> VRM <input type="checkbox"/>	Std Disp	Brightness	Tree	Menu
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Lat	23:46.348 N	REP. PAUSE	GyroHDG	039.0°	Speed	20.9 kt	DGPS 1	C-MAP	Standard	Date	14.09.02 UTC	
Lon	118:01.051 E	NGS84	ROT	< 0.7°/min	Course	038.0°		TM / TRUE	Overscaled	Time	00:26:34 UTC	

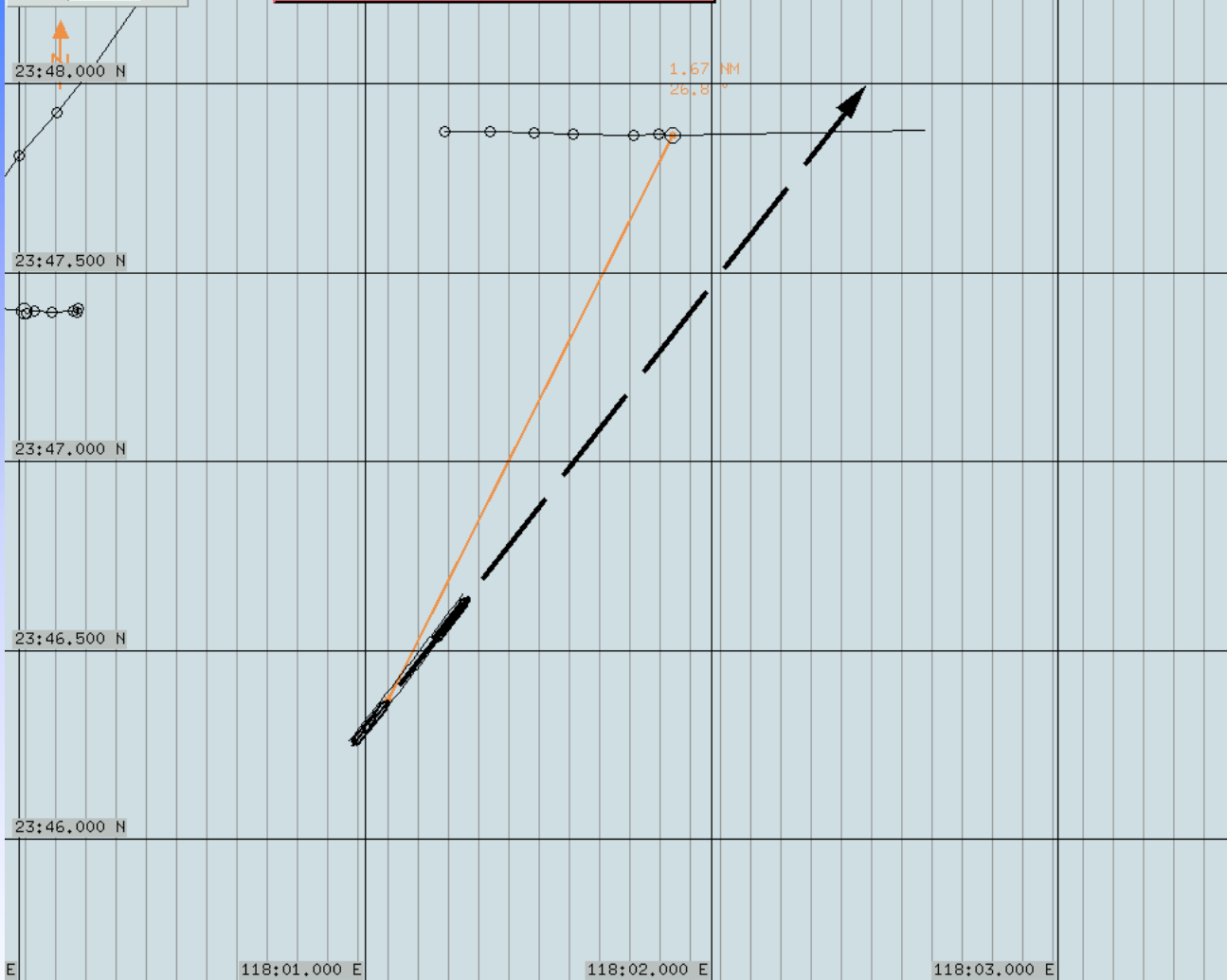
Set
Set Radius
Next

Short-Term [SSL-CP020]

File Display Options

14.09.02 00:26:34 UTC Paused

Set Speed
Next



CHARTPILOT / CHART

Docking ☐

ROT °/min 0 < 0.7°

GyroHDG

Pitch Shaft Shaft Pitch

Depth

Wind Rel ☐

Cursor

<input type="checkbox"/> EBL1	Set	CEN <input type="checkbox"/>	<input type="text" value="1.5"/> NM <input type="text" value="▲"/>	Set Center	<input type="checkbox"/> VRM	Std Disp	Brightness	Tree	Menu
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Lat	23:46.892 N	REP. PAUSE	GyroHDG	039.5°	Speed	21.0 kt	DGPS 1	C-MAP	Standard	Date	14.09.02 UTC	
Lon	118:01.530 E	WGS84	ROT	> 0.3°/min	Course	039.0°		TM / TRUE	Overscaled	Time	00:28:34 UTC	

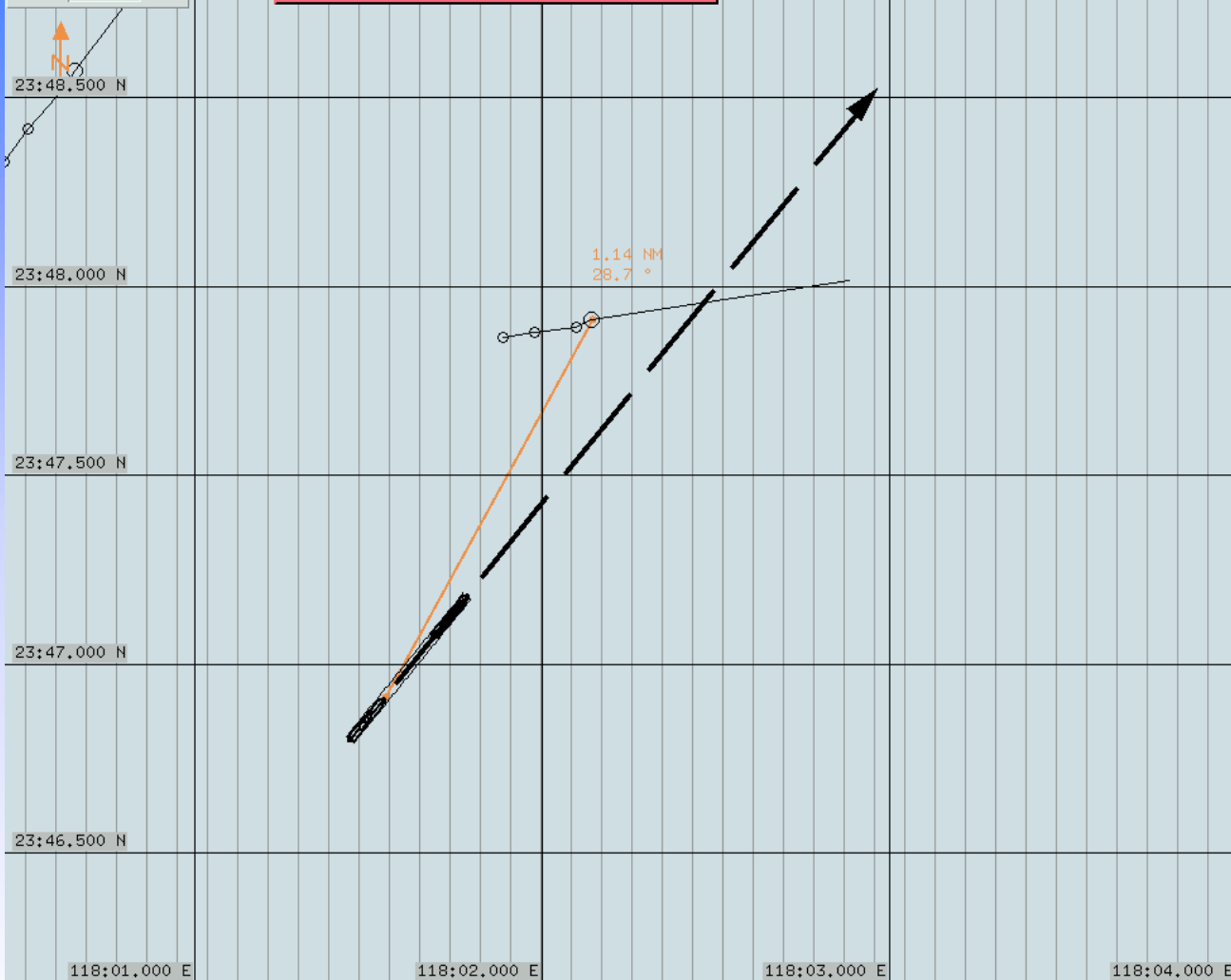
Set
Set Radius
Next

Short-Term [SSL-CP020]

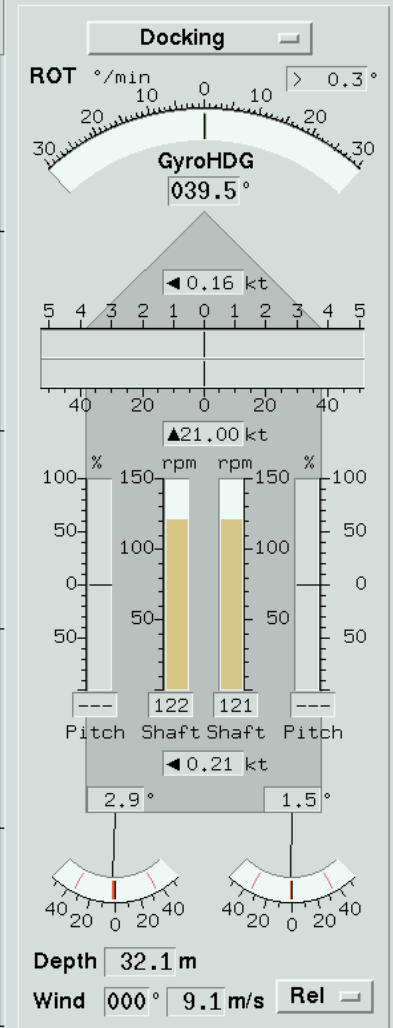
File Display Options

14.09.02 00:28:34 UTC Paused

Set Speed
Next



CHARTPILOT / CHART



Cursor

<input type="text" value="---"/>	<input type="text" value="---:---.---"/>	<input type="text" value="---"/>
<input type="text" value="---"/>	<input type="text" value="---:---.---"/>	<input type="text" value="---"/>

<input type="checkbox"/> EBL1	Set	CEN <input type="checkbox"/>	▼ 1.5 NM ▲	Set Center	<input type="checkbox"/> VRM	Std Disp	Brightness	Tree	Menu
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Lat	23:47.355 N	REP. PAUSE	GyroHDG	035.3°	Speed	20.8 kt	DGPS 1	C-MAP	Standard	Date	14.09.02 UTC	
Lon	118:01.917 E	NGS84	ROT	< 4.3°/min	Course	035.0°		TM / TRUE	Overscaled	Time	00:30:14 UTC	

Set
Set Radius
Next

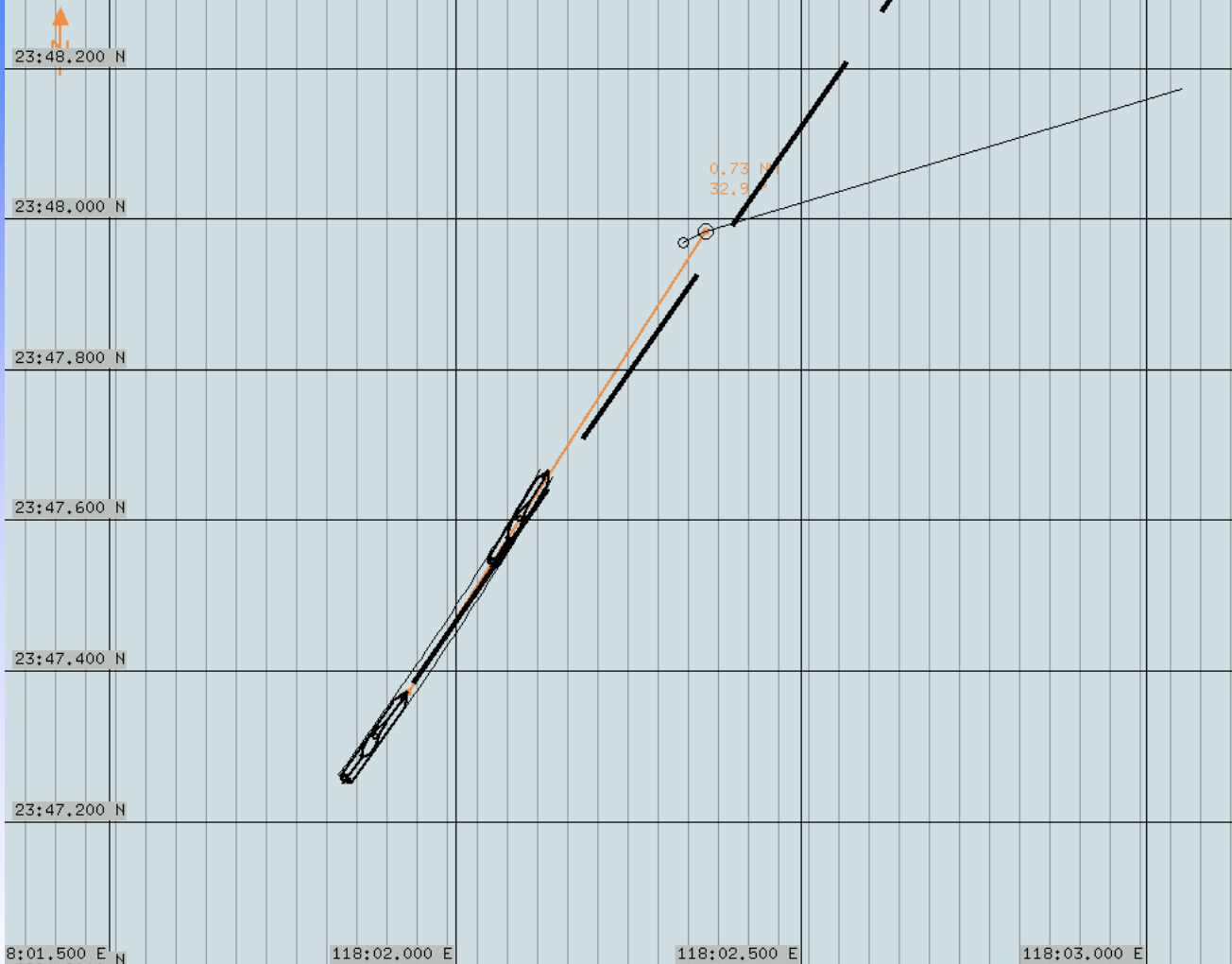
Short-Term [SSL-CP020]

File Display Options

14.09.02 00:30:21 UTC Paused



Set Speed
Next



CHARTPILOT / CHART

Docking ☐

ROT °/min 0 < 4.3°

GyroHDG

Pitch Shaft Shaft Pitch

Depth

Wind Rel ☐

Cursor

<input type="checkbox"/> EBL1	Set	CEN <input type="checkbox"/>	<input type="text" value="0.75"/> NM <input type="checkbox"/>	Set Center	<input type="checkbox"/> VRM	Std Disp	Brightness	Tree	Menu
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Lat	23:47.646 N	REP. PAUSE	GyroHDG	033.6°	Speed	20.9 kt	DGPS 1	C-MAP	Standard	Date	14.09.02 UTC	
Lon	118:02.128 E	WGS84	ROT	< 2.0°/min	Course	033.0°		TM / TRUE	Overscaled	Time	00:31:13 UTC	

Set
Set Radius
Next

Short-Term [SSL-CP020]

File Display Options

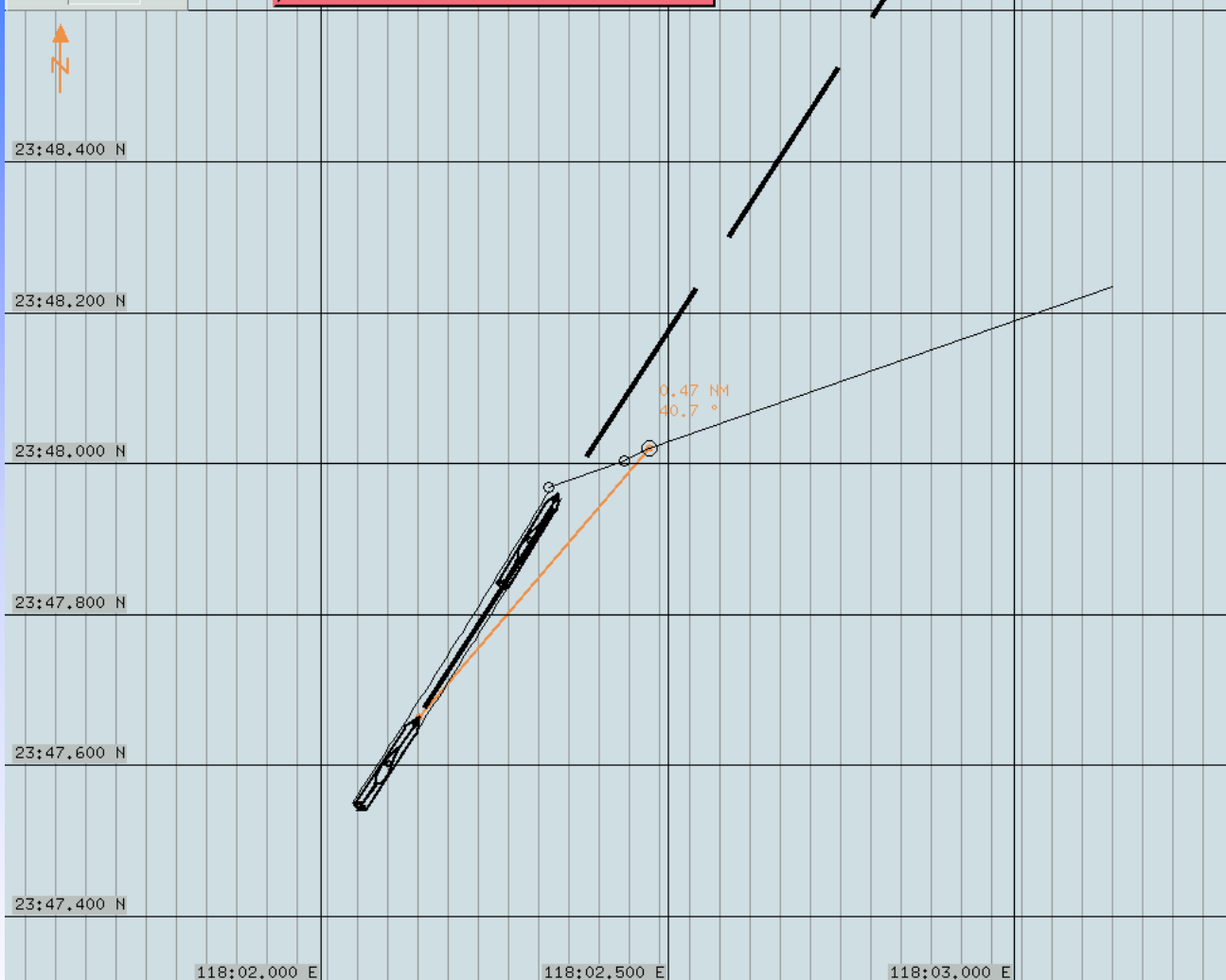
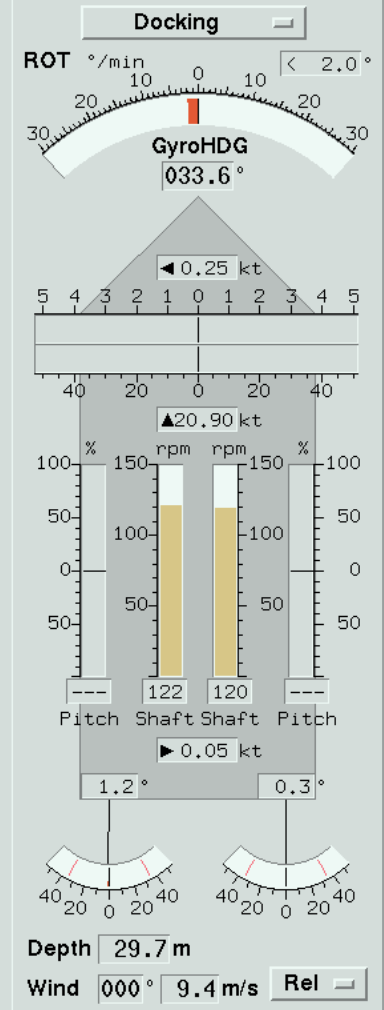
14.09.02 00:31:19 UTC Paused



Set Speed
Next



CHARTPILOT / CHART



<input type="checkbox"/> EBL1	<input type="button" value="Set"/>	<input type="button" value="CEN"/>	<input type="button" value="0.75 NM"/>	<input type="button" value="Set Center"/>	<input type="checkbox"/> VRM	<input type="button" value="Std Disp"/>	<input type="button" value="Brightness"/>	<input type="button" value="Tree"/>	<input type="button" value="Menu"/>
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Lat	23:47.743 N	REP. PAUSE	GyroHDG	034.3°	Speed	20.9 kt	DGPS 1	C-MAP	Standard	Date	14.09.02 UTC	
Lon	118:02.198 E	WGS84	ROT	> 2.6°/min	Course	034.0°		TM / TRUE	Overscaled	Time	00:31:34 UTC	

Set
Set Radius
Next

Short-Term [SSL-CP020]

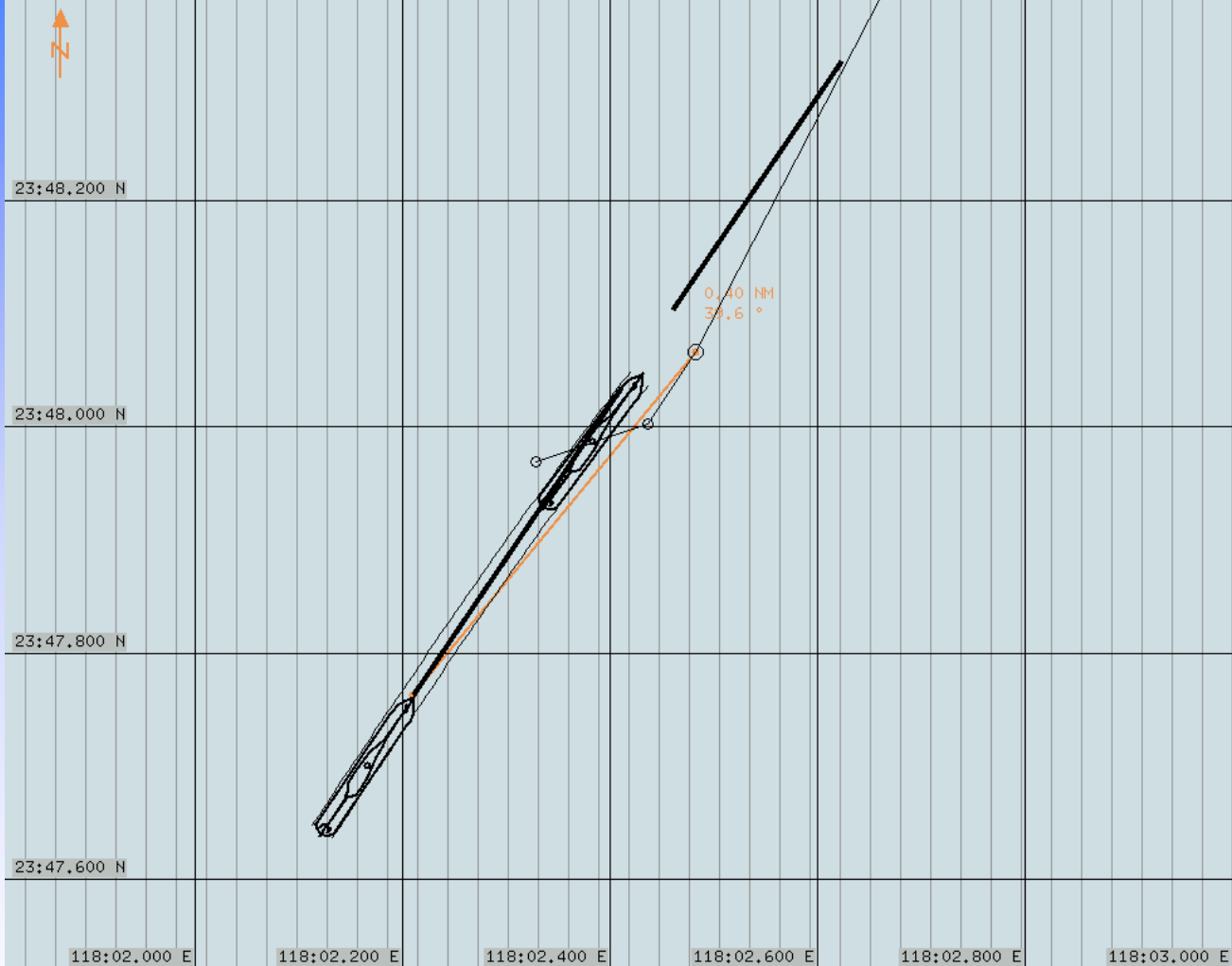
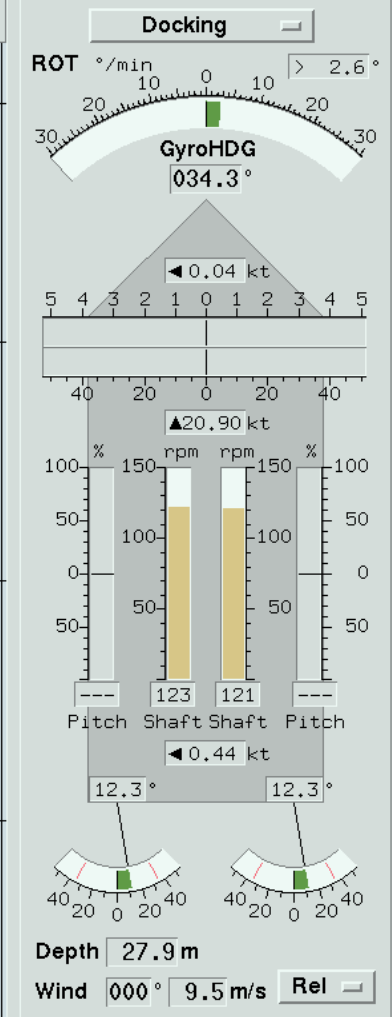
File Display Options

14.09.02 00:31:40 UTC Paused



Set Speed
Next

CHARTPILOT / CHART



<input type="checkbox"/> EBL1	Set	CEN <input type="checkbox"/>	<input type="text" value="0.50"/> NM <input type="checkbox"/>	Set Center	<input type="checkbox"/> VRM	Std Disp	Brightness	Tree	Menu
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Lat	23:47.914 N	REP. PAUSE	GyroHDG	046.7°	Speed	20.4 kt	DGPS 1	C-MAP	Standard	Date	14.09.02 UTC	
Lon	118:02.362 E	WGS84	ROT	> 16.1°/min	Course	045.0°		TM / TRUE	Overscaled	Time	00:32:15 UTC	

Set
Set Radius
Next

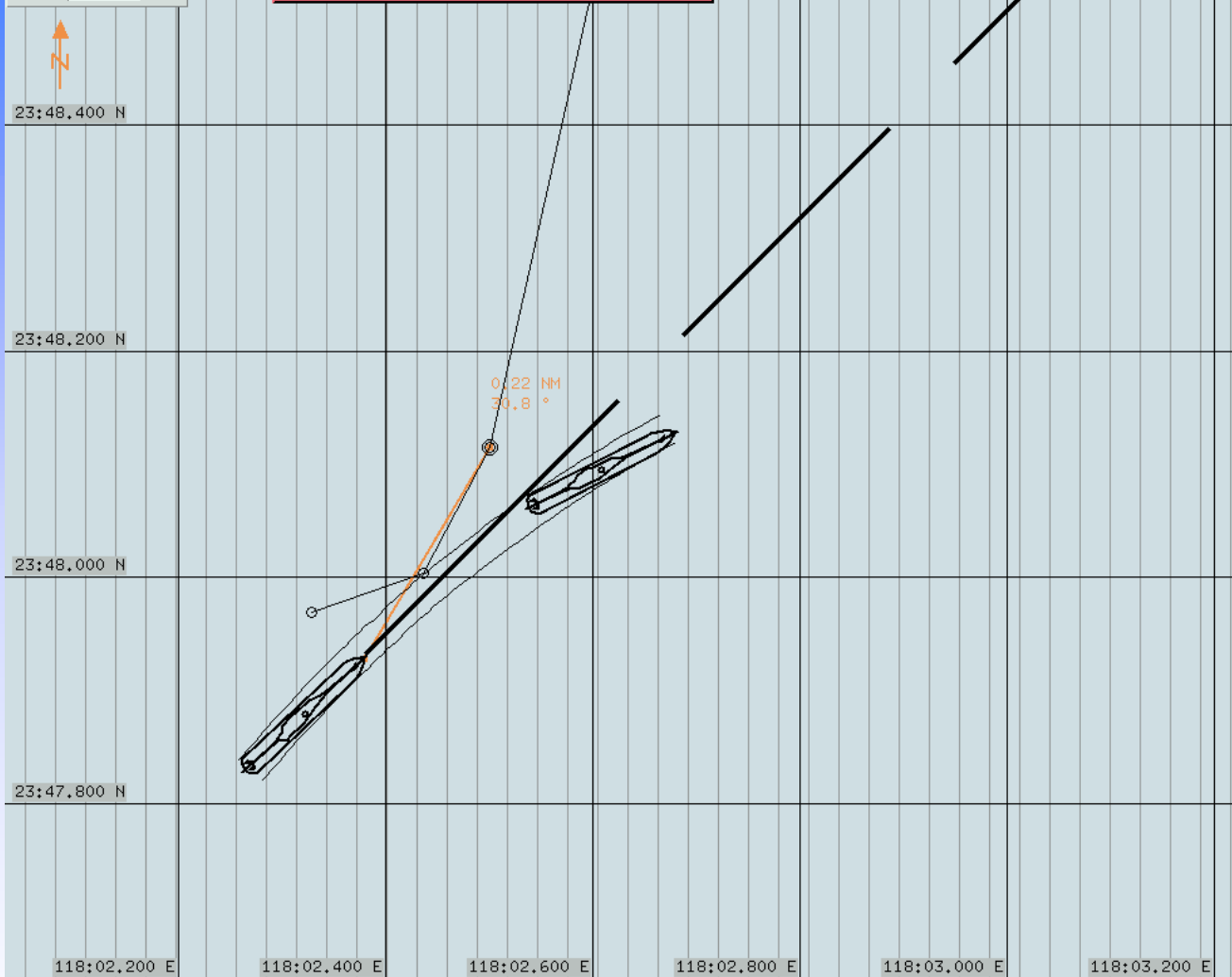
Short-Term [SSL-CP020]

File Display Options

14.09.02 00:32:15 UTC Paused



Set Speed
Next



CHARTPILOT / CHART

Docking ☐

ROT 10 0 10 > 16.1°

GyroHDG

Pitch Shaft Shaft Pitch

Depth

Wind Rel ☐

Cursor

<input type="checkbox"/> EBL1	Set	CEN <input type="checkbox"/>	<input type="text" value="0.50"/> NM <input type="checkbox"/>	Set Center	<input type="checkbox"/> VRM	Std Disp	Brightness	Tree	Menu
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Lat	23:47.987 N	REP. PAUSE	GyroHDG	054.4°	Speed	20.2 kt	DGPS 1	C-MAP	Standard	Date	14.09.02 UTC	
Lon	118:02.457 E	WGS84	ROT	> 23.7°/min	Course	052.0°		TM / TRUE	Overscaled	Time	00:32:35 UTC	

Set
Set Radius
Next

Short-Term [SSL-CP020]

File Display Options

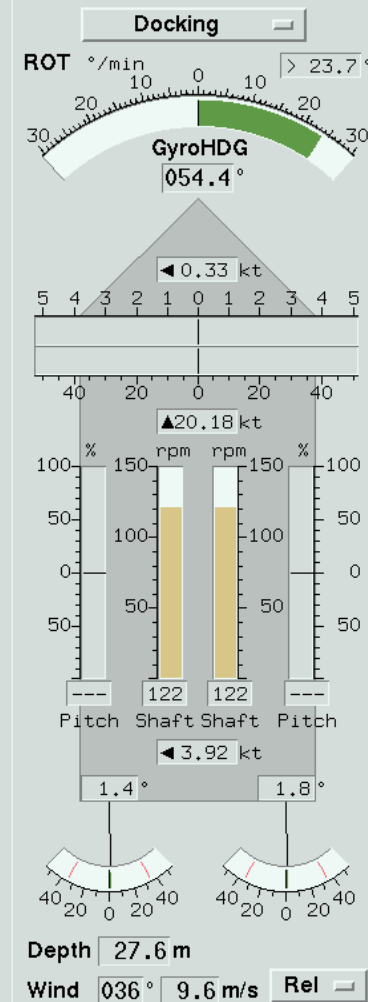
14.09.02 00:32:41 UTC Paused



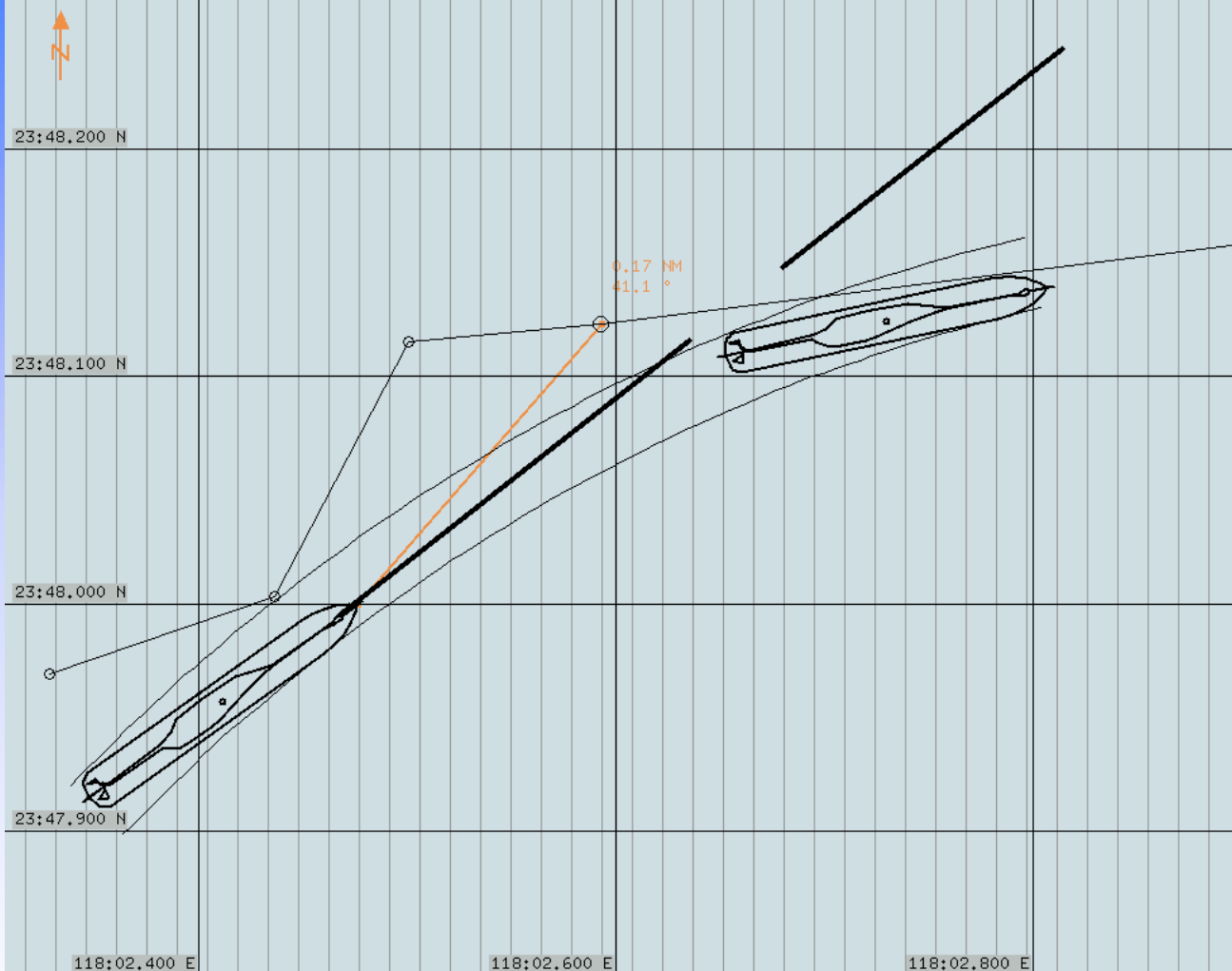
Set Speed
Next



CHARTPILOT / CHART



Cursor



<input type="checkbox"/> EBL1	<input type="button" value="Set"/>	<input type="button" value="CEN"/>	<input type="button" value="0.25 NM"/>	<input type="button" value="Set Center"/>	<input type="checkbox"/> VRM	<input type="button" value="Std Disp"/>	<input type="button" value="Brightness"/>	<input type="button" value="Tree"/>	<input type="button" value="Menu"/>
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Lat	23:48.046 N	REP. PAUSE	GyroHDG	060.9°	Speed	20.1 kt	DGPS 1	C-MAP	Standard	Date	14.09.02 UTC	
Lon	118:02.561 E	WGS84	ROT	> 16.1°/min	Course	059.0°		TM / TRUE	Overscaled	Time	00:32:55 UTC	

Set
Set Radius
Next

Short-Term [SSL-CP020]

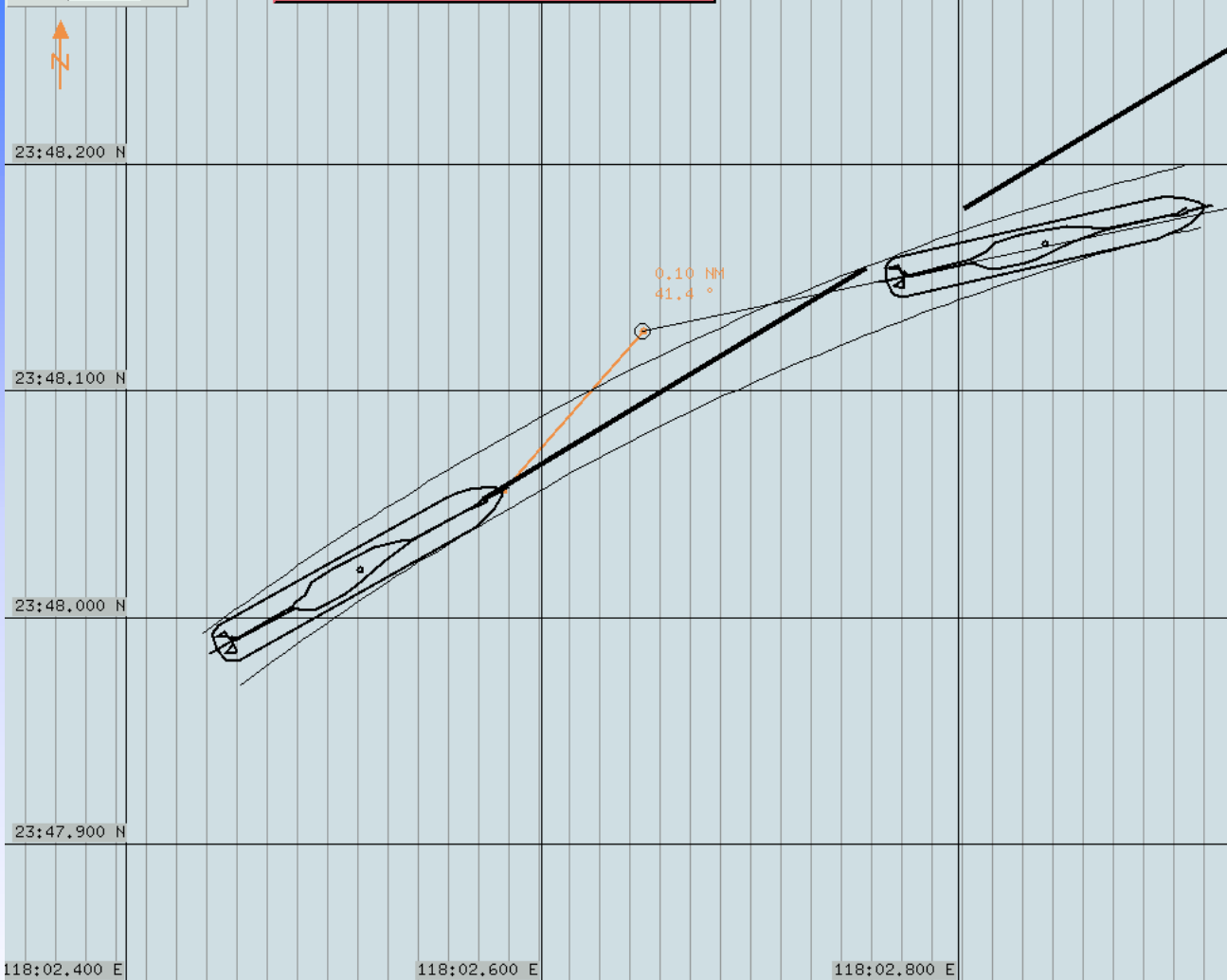
File Display Options

14.09.02 00:33:01 UTC Paused



Set Speed
Next

CHARTPILOT / CHART



Docking ☐

ROT °/min 0 > 16.1°

GyroHDG

Pitch Shaft Shaft Pitch

Depth

Wind Rel ☐

<input type="checkbox"/> EBL1	Set	CEN <input type="checkbox"/>	<input type="text" value="0.25"/> NM <input type="checkbox"/>	Set Center	<input type="checkbox"/> VRM	Std Disp	Brightness	Tree	Menu
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Lat	23:48.094 N	REP. PAUSE	GyroHDG	064.4°	Speed	20.2 kt	DGPS 1	C-MAP	Standard	Date	14.09.02 UTC	
Lon	118:02.665 E	NGS84	ROT	> 11.5°/min	Course	064.0°		TM / TRUE	Overscaled	Time	00:33:14 UTC	

Set
Set Radius
Next

Short-Term [SSL-CP020]

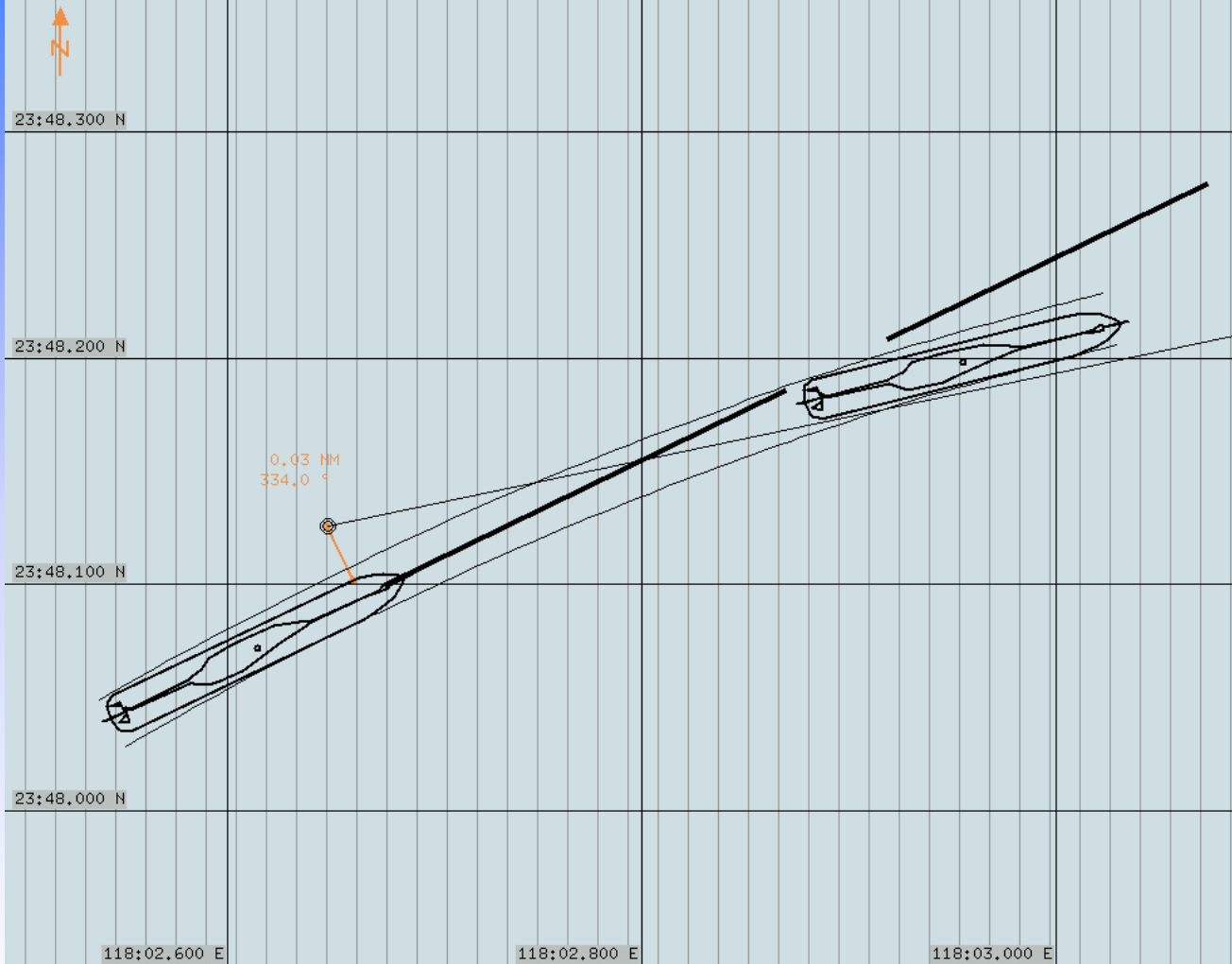
File Display Options

14.09.02 00:33:14 UTC Paused



Set Speed
Next

CHARTPILOT / CHART



Docking ☐

ROT °/min 0 > 11.5°

GyroHDG

rpm rpm

Pitch Shaft Shaft Pitch

Depth

Wind Rel ☐

<input type="checkbox"/> EBL1	Set	CEN <input type="checkbox"/>	<input type="text" value="0.25"/> NM <input type="checkbox"/>	Set Center	<input type="checkbox"/> VRM	Std Disp	Brightness	Tree	Menu
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Lat	23:48.461 N	REP. PAUSE	GyroHDG	054.2°	Speed	12.8 kt	DGPS 1	C-MAP	Standard	Date	14.09.02 UTC	
Lon	118:03.406 E	NGS84	ROT	< 25.7°/min	Course	054.0°		TM / TRUE	Overscaled	Time	00:35:55 UTC	

Set
Set Radius
Next

Short-Term [SSL-CP020]

File Display Options

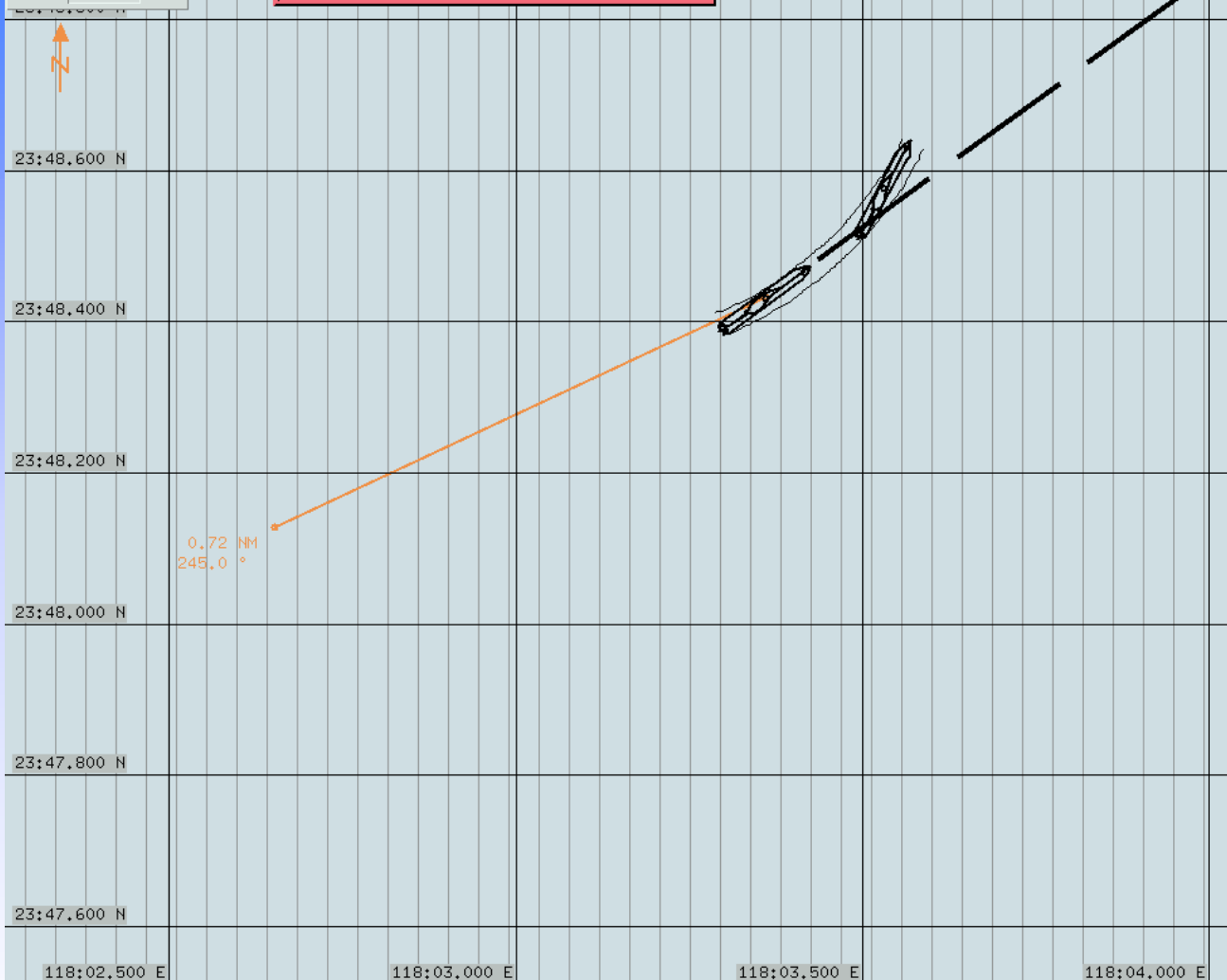
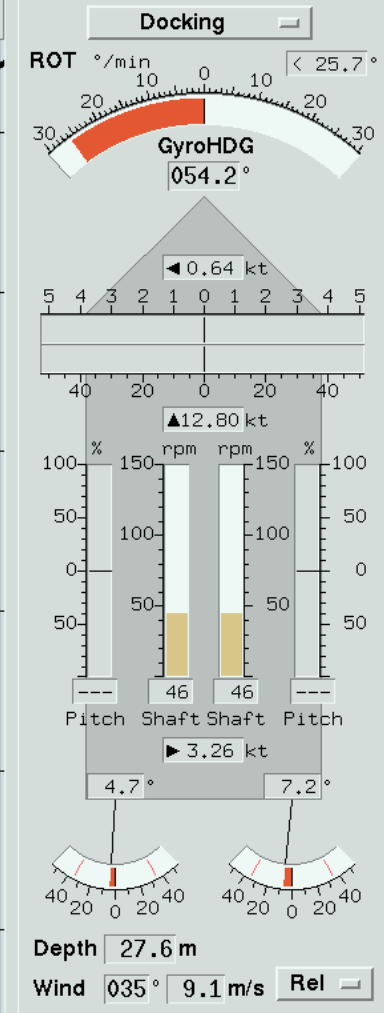
14.09.02 00:36:02 UTC Paused



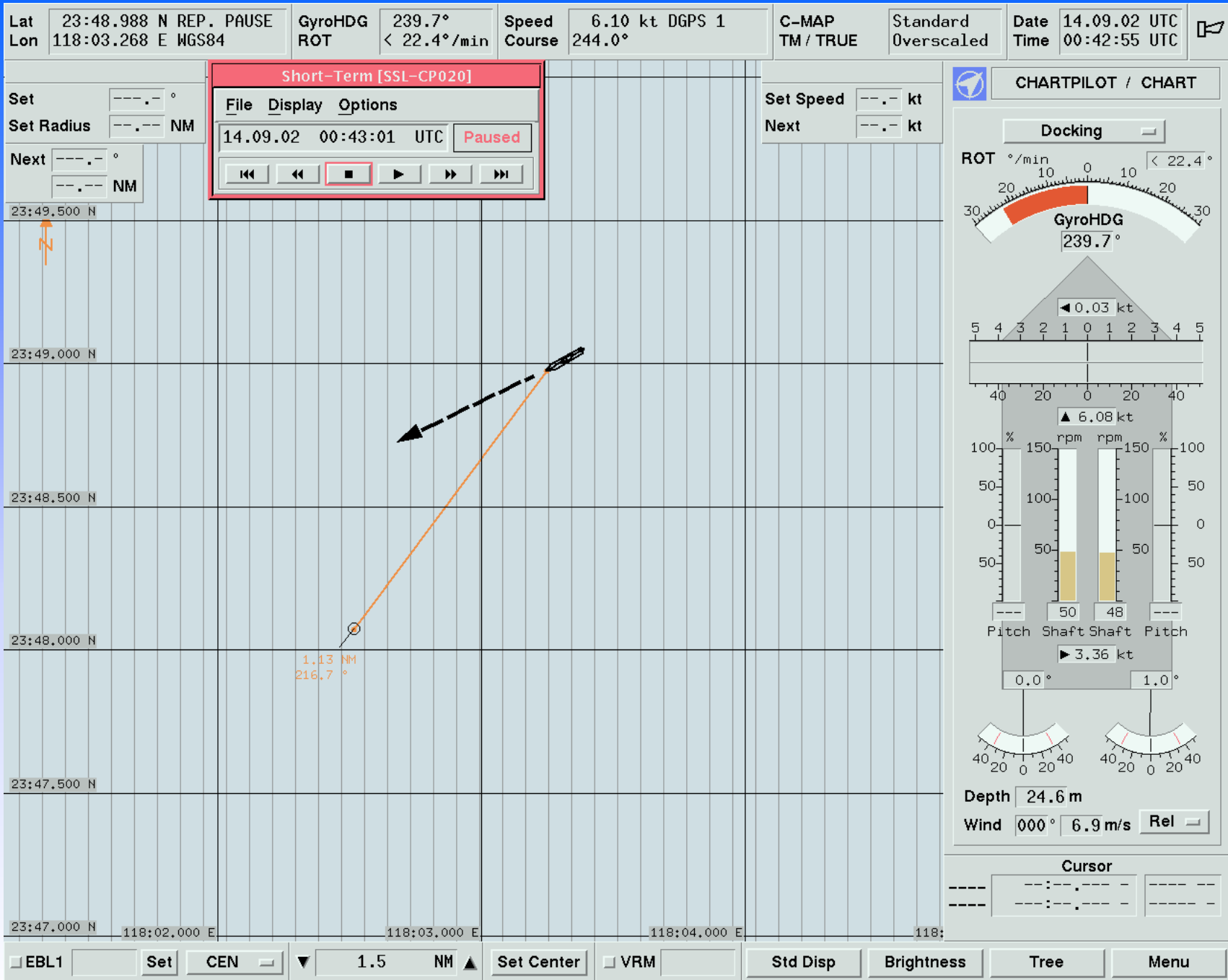
Set Speed
Next



CHARTPILOT / CHART



<input type="checkbox"/> EBL1	Set	<input type="checkbox"/> CEN	<input type="text" value="0.75"/> NM <input type="text" value="▲"/>	Set Center	<input type="checkbox"/> VRM	Std Disp	Brightness	Tree	Menu
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Lat	23:48.370 N	REP. PAUSE	GyroHDG	220.3°	Speed	6.80 kt	DGPS 1	C-MAP	Standard	Date	14.09.02 UTC	
Lon	118:02.609 E	WGS84	ROT	> 0.0°/min	Course	224.0°		TM / TRUE	Overscaled	Time	00:49:55 UTC	

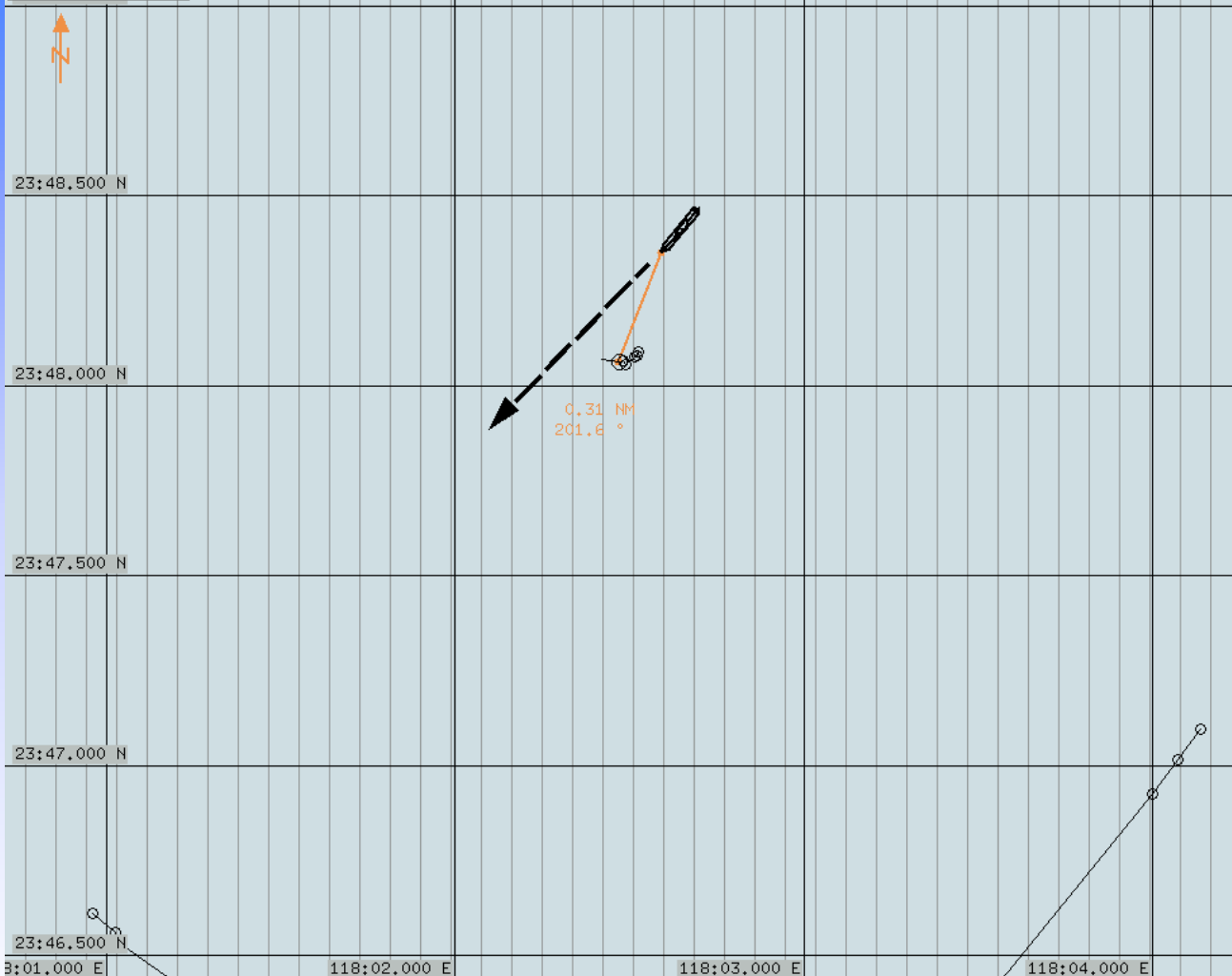
Set
Set Radius
Next

Short-Term [SSL-CP020]

File Display Options

14.09.02 00:50:01 UTC Paused

Set Speed
Next



CHARTPILOT / CHART

Docking ☐

ROT

GyroHDG

Pitch Shaft Shaft Pitch

Depth

Wind Rel ☐

Cursor

<input type="checkbox"/> EBL1	Set	CEN <input type="checkbox"/>	<input type="text" value="1.5"/> NM	Set Center	<input type="checkbox"/> VRM	Std Disp	Brightness	Tree	Menu
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